

JAN. 30, 1941

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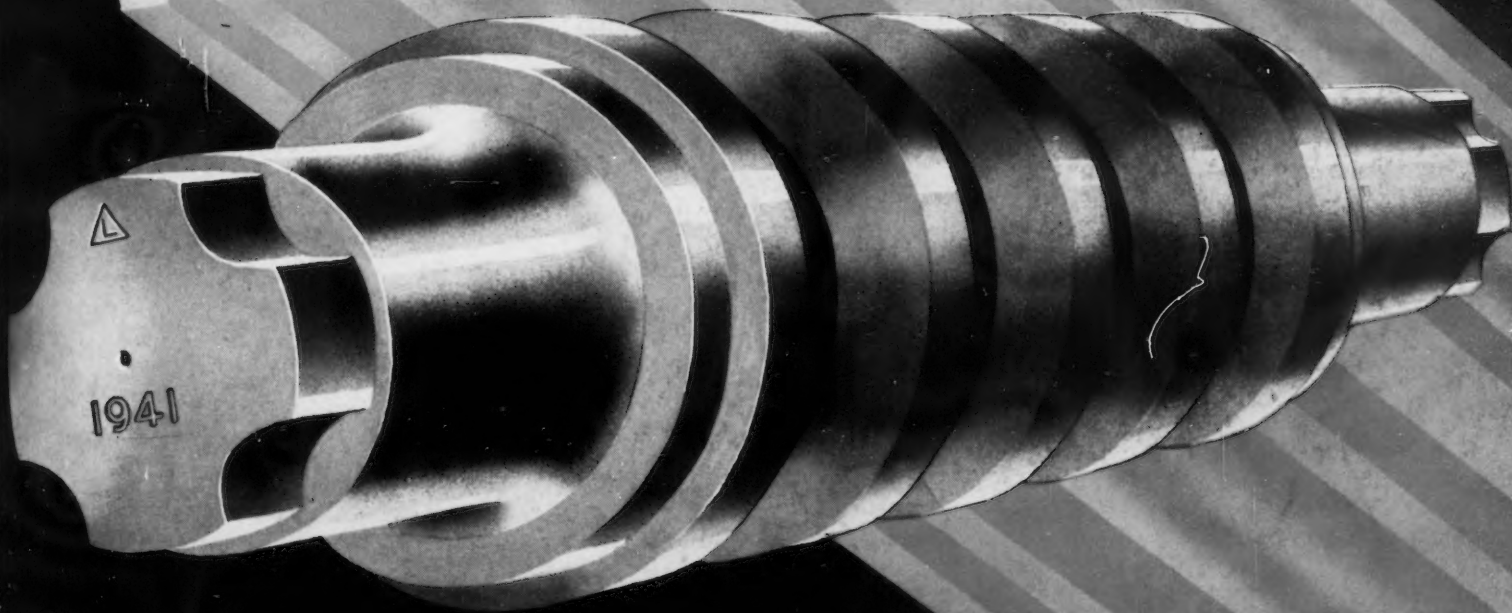
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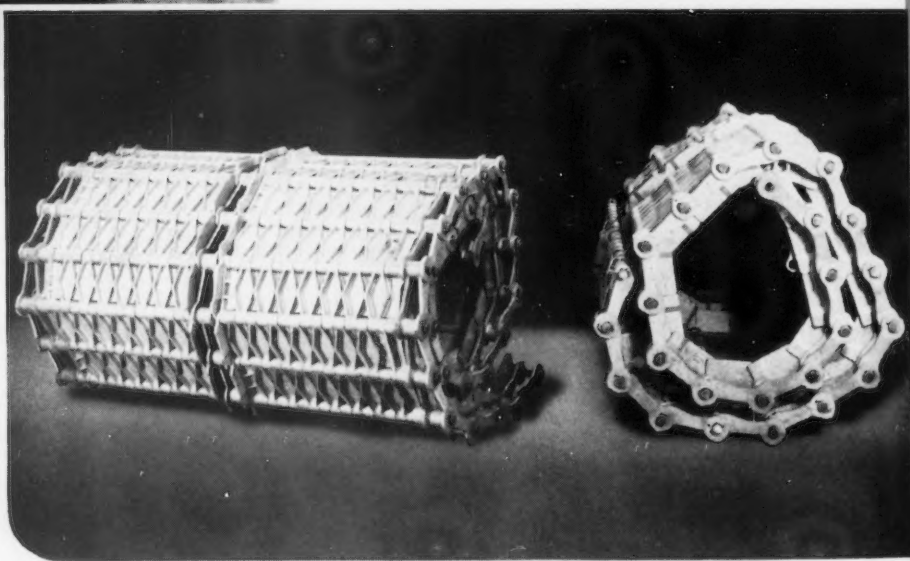




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# This Week in The Iron Age

JANUARY 30, 1941

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## Developing the Picture

POSSIBLY some of you who read this page are amateur photographers. If so, you will have observed what I have in connection with the development of a picture.

Quite a sequence of events takes place before you can see what you've got.

First, you have to start with the camera. Then you have to load it with film. That is just the beginning.

Next you have to find the scene that you want to take and that may mean considerable legwork; even headwork if it is to be a good picture. Then you have to appraise the conditions of lighting and estimate the speed of exposure and the stop. Then you press the button. You now have the picture—perhaps—but you can't see what you've got.

Next comes the process of development by which you get the finished negative. But still you don't see the picture because in the negative black is white and white is black and it's as hard for an amateur photographer to reverse images in his mind as it is for an amateur molder to see things in the "hollow" instead of the solid.

So you make a print by exposing sensitized paper to the light through the negative. And all you have as a result, as yet, is a plain white sheet of paper.

You are getting close to the picture; very close indeed, yet at this stage of events, if you did not know photography, you would think that you had missed the boat. But at least hoping that you haven't, you get ready to develop the print.

The maker of the developer tells you that the developing time is two minutes. In goes the blank sheet of paper. You watch it intently to see what happens. Thirty seconds, forty-five, sixty, a minute and a quarter. Still just a plain blank sheet of paper with forty-five seconds to go. Is it a flop?

Five seconds more and discolorations appear here and there. You can't recognize them. But second after second from then on, with increasing acceleration, the details build up so fast that when the two minutes have passed, there is your picture, clear and distinct in every detail.

Our National Defense effort is like that. Lots and lots of preliminary groundwork with little to show for it until the nearing of the end of the process. And then it will all come together with a surprising suddenness that will amaze us and startle the world.

Remember this analogy when you hear people complain about things going too slowly. Most of us want to see the finished picture right after we press the button. But that's out!

*J. H. Lawrence*





## More than 40 Years of Research —in Every Pound of Inland Steel

**T**HE Inland Steel Company has always anticipated the exacting requirements of the metal working industry by producing finer, more uniform steel. For over 40 years, Inland research has been directed at this objective.

When Inland started its first mill, in 1893, every then known scientific method was applied to making its products. At first, research centered on making better harrow teeth, plow beams, merchant bars, etc. As the years have passed, Inland not only has added greatly to its physical plant, but also has greatly expanded research and metallurgical facilities.

Inland research has given industry such valuable steel mill products as: high-strength, low alloy Hi-Steel; lead-bearing, fast machining Ledloy; finer cold reduced tin plate; etc. Inland was among the first to offer the superior quality of sheets and strip made by continuous mills. Inland research has pioneered many steel processing methods and control devices by which steel of finer quality and greater uniformity are made.

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60

50

40

30

20

10



# Enlisting Small Plants For U. S. Defense

By JAMES A. ROWAN  
News Editor

**M**OBILIZING of the full man power and machine power of American industry for the nation's defense this week is getting the attention of more and more leaders in industry and government.

The problem is bulking as one of the most important confronting the defense program. How can the small plants be brought into the picture as secondary contractors? Is it necessary that they be brought in? Can big business alone handle the job of defense goods production? Must industry develop its own plan of "lease-lending" machinery?

To some of these questions defense leaders were getting slow and painful answers. The nation has scores of giant companies but it has also many thousands of small metal-working companies. In the face of reports of shortages of machine tools for defense plants, it was estimated that 50 per cent of the nation's existing machine tools are, for one reason or another, idle.

Large companies holding original contracts are contemplating the headaches of doing business with scores and scores of small suppliers who might, to the large concerns, be complete "strangers." They are thinking of the inconvenience, of delays in deliveries, of specification troubles, of shortages of materials, tools and skilled men, of lack of credit, of lack of technical experience.

And small contractors, still for the most part shut out of defense contracts, all over the country are clamoring for second and tertiary defense orders for their idle or partly idle plants and employees.

An assortment of plant surveys is being made by an assortment of agencies. The giant of them all is the national plant inventory initiated recently by William S. Knudsen, director general of the Office of Production Management, and carried on by the National Industrial Council. All these surveys seek data on existing and potential defense resources regardless of size.

In all this activity it is natural that the emphasis is placed on machine tools, whose builders have been working under forced draft for several years. And

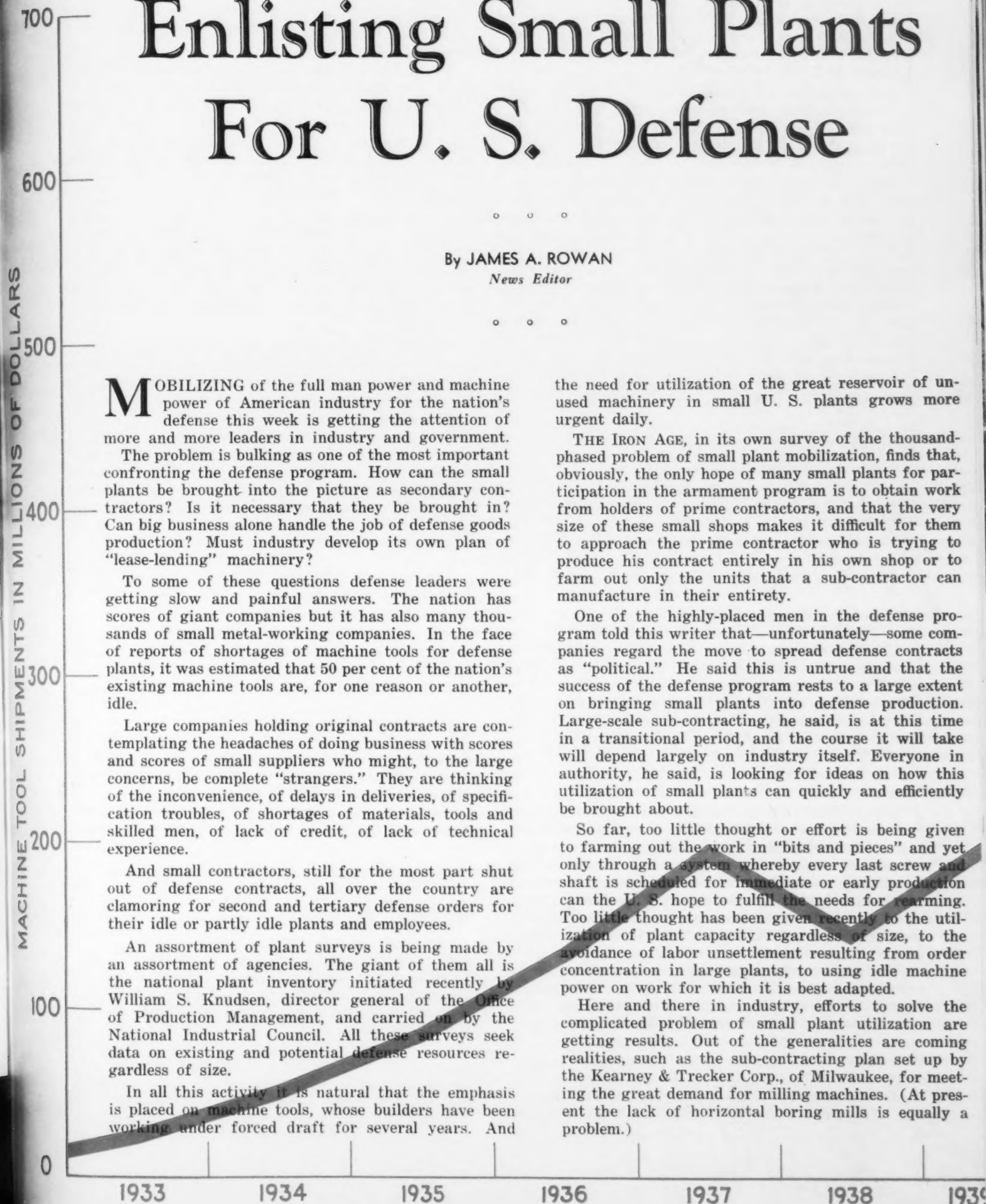
the need for utilization of the great reservoir of unused machinery in small U. S. plants grows more urgent daily.

THE IRON AGE, in its own survey of the thousand-phased problem of small plant mobilization, finds that, obviously, the only hope of many small plants for participation in the armament program is to obtain work from holders of prime contractors, and that the very size of these small shops makes it difficult for them to approach the prime contractor who is trying to produce his contract entirely in his own shop or to farm out only the units that a sub-contractor can manufacture in their entirety.

One of the highly-placed men in the defense program told this writer that—unfortunately—some companies regard the move to spread defense contracts as "political." He said this is untrue and that the success of the defense program rests to a large extent on bringing small plants into defense production. Large-scale sub-contracting, he said, is at this time in a transitional period, and the course it will take will depend largely on industry itself. Everyone in authority, he said, is looking for ideas on how this utilization of small plants can quickly and efficiently be brought about.

So far, too little thought or effort is being given to farming out the work in "bits and pieces" and yet only through a system whereby every last screw and shaft is scheduled for immediate or early production can the U. S. hope to fulfill the needs for rearming. Too little thought has been given recently to the utilization of plant capacity regardless of size, to the avoidance of labor unsettlement resulting from order concentration in large plants, to using idle machine power on work for which it is best adapted.

Here and there in industry, efforts to solve the complicated problem of small plant utilization are getting results. Out of the generalities are coming realities, such as the sub-contracting plan set up by the Kearney & Trecker Corp., of Milwaukee, for meeting the great demand for milling machines. (At present the lack of horizontal boring mills is equally a problem.)





Kearney & Trecker, forced by large orders for milling machines, has established an Outside Work Department to handle its 70 (latest count) sub-contractors. The task of handling sub-contracting was too great to be loaded on the company's normal, peacetime departments. Other companies, machine tool manufacturers or not, may be able to profit from Kearney & Trecker's experience.

Sub-contractors for the manufacture of the Kearney & Trecker milling machines came from four sources. They are (1) the company's list of customers, (2) its list of dealers, (3) its other friends, and (4) volunteers.

When the Kearney & Trecker production department calls on the Department of Outside Work for aid, the wheels of a highly organized sub-contracting department begin to roll. (E. A. Boettcher, present manager of the Department of Outside Work calls his department the "applied common sense department," but the operation of this division cannot be written off so casually.) The Outside Work Department digs into its file in a search for outside plants capable of doing the job. Naturally the Kearney & Trecker Co. can't find "stranger" plants making milling machines or parts under its own cost conditions. In plants of all prospective sub-contractors there are "major and minor" operating factors. One plant may be in a better cost position regarding grinding, or turning or milling or some other operation.

Wherever possible, the work to be done is broken up into pieces and each piece is allocated to the plant which is best equipped to do the job and the *one which can make a fair profit*. The selected small (large in some cases) plant must be able to determine exactly how much time will be consumed in doing the work; it must be able to guarantee that it will meet the K. & T. schedule since that is most essential.

Since the Milwaukee company and other companies, some of whom have done an equally outstanding job of sub-contracting, operate their plants against a price list, the company must select the best work for the best-fitted supplier so that *the latter can make a profit*. This results in retaining his interest as a sub-contractor and enables K. & T. to depend on him for a continuous flow of materials. Acknowledgment of the small plant's right to a profit rests at the heart of the K. & T. sub-contracting plan.

**O**RGANIZATION of the Kearney & Trecker Department of Outside Work presents an interesting setup. (See the K. & T. organization chart on page 33.) A coordinator gears the department to the main organization. Under him are six divisions which he considers almost equally important. These are correspondence, engineering, progress, inspection, shipping and receiving and purchasing. An inspection of the postal costs and telephone tolls of a sub-contracting program such as Kearney & Trecker's provides evidence as to the activity in the "correspondence" department. Hundreds of inquiries from sub-contractors must be answered, other hundreds sent out.

The inspection division in the K. & T. Department of Outside Work includes inside inspection—of the parts and complete milling machines coming to the Milwaukee plant for a final test—and outside inspection. The Department of Outside Work has a total of 16 inspectors of which 12 are inside and four out-

side. Progress reports from sub-contractors are a vital part of the K. & T. plan and periodic inspections help to keep delivery schedules. Six men are detailed to obtain progress reports on the company's contracts. The Engineering Division includes sub-groups for tolerances, design and duplicate tools and fixtures.

The Kearney & Trecker plan of sub-contracting has been selected as unique by the War Department, hence Messrs. Joseph L. Trecker, vice-president, and Francis J. Trecker, assistant chief engineer and former manager of the Department of Outside Work for the Milwaukee company, have been assigned posts in the War Department's planning division to assist in a speedup of U. S. sub-contracting.

Of considerable importance in the defense program, in the eyes of the small plant operator, is the subject of credit. Banks, for the most part seem anxious to cooperate in financing defense production, this writer is told. One large Eastern bank, for example, is notifying its customers through advertising and other agencies that:

"In connection with the national defense program many companies are being invited to bid on orders not only for products in their regular lines but also for products that they are competent to make but which may not be related to their normal production. This may require alterations or additions, or installation of special machinery, and may bring about a need for additional working capital. The (name of bank) desires to participate in the financing of such requirements, not only as a matter of good banking but also because of its desire to cooperate with the nation's program.

"We would welcome an opportunity to discuss with business executives any needs their companies may have in these respects," the bank concluded.

If a small businessman wants sub-contracts he should get acquainted at the banks on a defense basis. He may not need to borrow money now but the time may come when he will need cash to expand his plant for making defense goods.

He should provide a complete descriptive list of his equipment in seeking sub-contracts, and get a complete list of the primary contractors with whom he may do business. Much correspondence from small companies to the primary contractors is vague and highly indefinite. He should not write a letter like this:

Prime-Contractual Steel Products Corp.

Gentlemen:

We hear you have received a defense contract of some sort or other and would like to manufacture parts for your company. Please answer at your earliest convenience.

Sincerely and hopefully,

(signed)

A Would-be Sub-Contractor



## Trecker Urges Location, Utilization Of Existing Defense Machines As First Step

By JOSEPH L. TRECKER\*

Preliminary studies of the problem of bringing together in existing manufacturing equipment and the demand for such facilities develop a variety of lines for action.

In one line we find the long term plan which envisions the "ghost town" rehabilitation; the "kitchen" production of "bits and pieces" and several other related schemes of action toward a complete and "all-out" effort for obtaining production in every sense of the word.

The next line is the problem of fitting out for current or "on order" needs, for the fulfillment of already placed contracts. This line develops the utilization of existing small

and possibly unused facilities as a permanent part of the production plan by farming out parts so as to eliminate additional unnecessary creation of material facilities. This step is possibly the most important and far-reaching in overall effect, and makes possible a minimum of labor displacement and the smallest economic disarrangement of our normal peacetime productive facilities.

Another and immediate line of action, and one which may afford relief for the harried contractor of key material, is the locating of existing equipment which has been sold within the last 10 or 15 years, determination of its present use and availability and contracting for it for unit processing, such as planing, grinding, milling, etc., so as to effectively tide over the contractor until his "on order" equipment is delivered. This step

will result in the continued use of all facilities after our present emergency has passed, and effect a permanent "farmed out" system.

These three lines of action require time to take effect, and a varying degree of planning and preparation. The first course, by reason of its most far-reaching action, requires the greatest length of time. The second is at the moment more possible and more easily envisioned, but involves a vast amount of detailed study and investigation as well as considerable persuasion to effect a coordination of the needs, with the facilities available.

The third (locating and utilization of existing equipment) is of immediate importance and concern, and can begin its move from reliable sources and extend quickly into reliable advice through contracting offices to the neediest and most pressing wants.

\* Joseph L. Trecker, vice-president of Kearney & Trecker Corp., Milwaukee, and his brother, Francis J. Trecker, assistant chief engineer of that company, have been designated by the National Defense Advisory Commission to cooperate in bringing small plants into the defense program as sub-contractors.

Letters like that are in the files of most of the companies which have received original defense contracts from the various government agencies. Nothing much can be done about them.

Instead, the small industrial leader should decide what his plant is best equipped to do and provide full information to the prime contractor. Be sure the prime contractor knows all about the company. Then the same information should be given the district government procurement office, which in many cases will be the Ordnance District Office of the War Department. At the same time this information should be given to the Federal Reserve Bank or branch bank representative who has been designated by Donald M. Nelson, of the National Defense Advisory Commission, to coordinate the efforts of small businessmen to obtain defense business and the efforts of prime contractors to get the assistance of these small businessmen.

Information offered by the prospective secondary contractor should include the present rate of operations of his plant or plants. Naturally, plants now idle or working only part time will, other things like equipment and location being equal, be high on the list of factories to be brought into the defense picture.

The head of the small plant should list the number of various skilled employees on his payroll and should provide the district procurement offices for the various government agencies and the Federal Reserve Bank small business representative, with a prospect

list of prime contractors with whom he might do business.

A plant may be operating at 100 per cent of capacity from the viewpoint of its management but be partly idle from the viewpoint of national defense. If a plant getting out its completed products at a rate of 100 per cent includes a shop with a battery of machine tools operating only 8 hr. a day to fill the plant's needs, the plant is not operating at capacity from a standpoint of defense. The idle machine capacity in a small shop may be vitally useful to some department in some nearby plant making products urgently needed for defense.

The lifetime of such overloaded machine tools would no doubt be shortened under such a "machine lending" system but the machines can be replaced and their fullest possible use might help lengthen the lifetime of the American industrial system. Machines that are fully utilized in defense production will wear out more quickly but the need for their over-loading is great. Such over-loading will create a replacement market for machine tools when the emergency is over.

In this emergency an idle machine is like a deserter from the army, the industrial army on which the military army depends. In this emergency the emphasis is placed heavily on PRODUCTION.

The most casual survey of the nation's defense needs and its present efforts to fill these needs suggests that much idle capacity is masked by the high operating rates of many U. S. plants. The small plant owner



should get in the habit of asking himself questions like this:

"Your horizontal boring machine may be working only part time for you. Can it work the remainder of the time for someone else?"

Among other steps which are likely to be taken for defense is the use of plant visits. The prospective sub-contractor must study the products of prime contractors and determine what part or what process can be produced or carried on in his own plant. Wherever possible he must get into the plants of the prime contractor, so that he or his representatives can see what is being done. He will see operations that he can do himself, parts that he can make, shortcuts that he can take in his own production.

If the large companies in each of the scores of industrial districts in the U. S. were to permit inspections of defense production in their own plants on a

**U. S. metal-working companies without prime defense contracts**

# 6650

**D**ISTRIBUTION of sub-contracts from the "hard core" of 1850 companies which have received prime defense contracts to the 6650 metal working companies which have not received prime contracts is one of the National Defense Advisory Commission's biggest problems. (The 8500 metal-working establishments in these above totals have annual productions above \$100,000. They do 90% of the business in the metal-working industry.)

# 1850

**Metal - working companies with defense orders over \$100,000**

mass scale, say by hundreds of small makers of metal products (after the visitors had been looked over by the FBI), one step toward successful utilization of America's small plant utilization in defense would have been taken.

Some system may be worked out whereby small plants, with their less efficient equipment, may concentrate on filling orders for commercial products. Then the larger companies, better equipped for manufacture of highly specialized war goods, would be more able to concentrate on that class of products.

**I**T is growing clearer that what the small plant operators can do to help themselves and the nation is considerable.

They can, for example, pool their resources as did a number of plants at York, Pa., and deal with the original contractor so that a group of small companies can handle a secondary contract which may be far too large for any one of them to handle alone. They can familiarize themselves with the equipment in nearby plants and determine where their various capacities for metal working complement each other. If a small plant has grinding capacity which is 50 per cent idle, the fact should be broadcast. A plant

with turning or milling capacity only 75 per cent utilized is not doing its share in national defense and should be forced into full production.

Chambers of Commerce and trade associations can and are helping and, if European experience in mobilization of industry is followed, will be given great powers and great responsibilities. Nevertheless the formation of small units of metal products companies—and of makers of other defense goods for that matter—within these broad industrial and business groups seems desirable. The American Iron and Steel Institute and the National Machine Tool Builders Association already are doing highly valuable work and are getting results. At the same time, the broad geographic distribution of industrial plants in the U. S. suggests that the work of these associations in speeding production should be supplemented by the development of "Good Neighbor Units" of metal-working companies. After organizing, these small companies, no longer small when viewed as a "defense unit", can publicize their ability to take sub-contracts and in some cases prime contracts.

Acting as units these groups of small companies, operating, for example, under a name such as the "Mahoning Defense Plant Association," can make their existence known and can obtain the business which they want and which the government and every defense production leader wants them to have. Such defense units evidently are among "the things to come."

A study of defense production suggests that the small companies can combine their equipment, their technical facilities, their supplies of skilled workmen, and their selling facilities. They can seek business along geographical lines. Above all they must make known what work they can do, what needs they are equipped to fill.

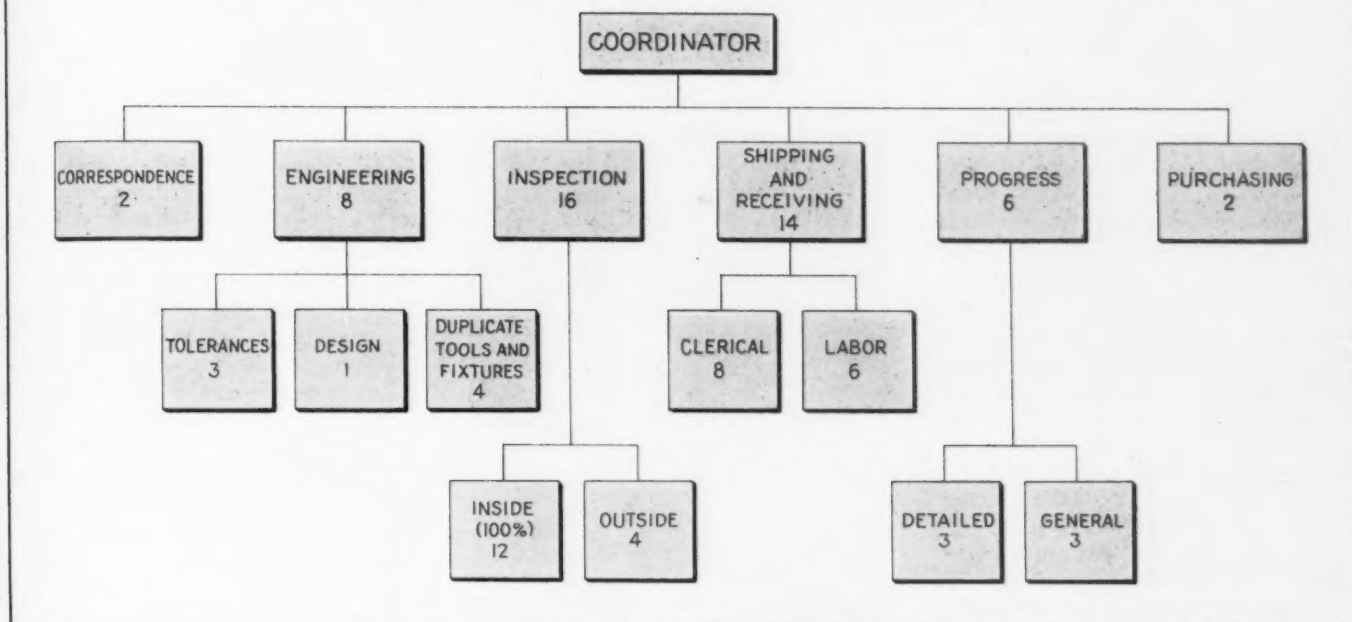
Isolated small plants have a somewhat more complicated problem but under an "all out" U. S. production cannot be allowed to stay idle. Wide distribution of the new airplane and munitions plants planned and already being built in relatively isolated communities throughout the country will help such companies. Thus isolated plants, with useful equipment which can be used in producing some of the thousands of items needed for the defense program, should familiarize themselves with these new government-financed defense plants in their own territories. In some cases, new industrial communities existing beyond the end of this war may grow up around these plants.

In the case of the isolated plant, as in the case of the plants in some of the highly congested industrial areas where factory units fill unbroken miles, a thorough survey of equipment is required. Equally necessary is an analysis of idle periods and a study of the long list of parts and metal-working operations necessary in production of the guns, planes and other highly complicated war-making machinery of today. The isolated plant must broadcast its ability to manufacture defense goods if it has this ability. Otherwise the full industrial capacity of the U. S. cannot be brought into full production.

Lack of knowledge of what is required in the manufacture of war equipment production evidently is a substantial obstacle to the greater utilization of Amer-



## DEPARTMENT OF OUTSIDE WORK



**T**HIS organization chart describes Kearney & Trecker Corp.'s Department of Outside Work, of which E. A. Boettcher is manager and coordinator. Kearney & Trecker's plan is considered a model for subletting defense contracts and bringing small plants into production for U. S. defense. (Number of employees in each department is shown on chart.)

ica's small plant capacity. Some system of circularizing the thousands of small plants with information about defense needs eventually must be found. It will be a matter of education in which the large industrial units with their large research and engineering departments, their ample organizations for obtaining vital information will play a part.

Much information about defense orders is being circulated by word of mouth, a "random" method of information exchange. A railroad man with a natural interest in increasing the volume of traffic on his division will pass along a defense order tip to a plant along his road with the suggestion that the plant may get some of the business.

Utilities likewise are serving as information agencies and are, in some cases, keeping their customers for light and power posted as to the status of specific prime contracts. Industrial publications are in a position to provide a thorough-going service in keeping the prospective sub-contractor posted as to methods as well as to awards to prime contractors. It is by utilizing all available sources of information that the small company will keep itself in line for orders in 1941. At this stage in the building of U. S. defense, the facilities for direct exchange of information about sub-contracting are not very highly developed.

Exhibits of manufactured defense goods in plants, or by associations, would be helpful, in the opinion of some industrialists. This is being done in Detroit. Technical associations, in national and chapter meetings, are hastening the education of small industries but in this educational process a speedup is needed. In some quarters it is suggested that prime con-

tractors must make a greater effort to assist small companies, that the inspection of the big plants, where this is feasible, should be accompanied by inspection of small metal-working plants on a large scale by "travelers" from the large plants. Undoubtedly the organization of periodic "small company" discussion meetings at some of the large plants would bring more of the smaller plants into the production picture. Groups of small plant operators must be taken into anti-aircraft gun plants, for example, to watch the full manufacturing process from blue prints to loading of finished products into cars.

Obstacles toward utilization of small plant capacity in defense goods production are frequently talked about. They do exist. When the urgency of U. S. defense is more clearly understood over the next few months, some of these obstacles will not appear very important.

The small company which would be a defense sub-contractor must understand its own capabilities in the way of plant capacity and personnel. The next step is to publicize fully its capacities and its problems. For the small manufacturer in the metal industries is a far more important factor in the defense program than he realizes or, at the present time, some others realize. His adaptability and speed in getting his plant into production of war goods during the next six months will help keep open for U. S. industry the door to free, voluntary cooperation with the government. The extent to which the potential reservoir of man hours and machine hours in small U. S. plants is used before the end of 1941 may be considered vital.

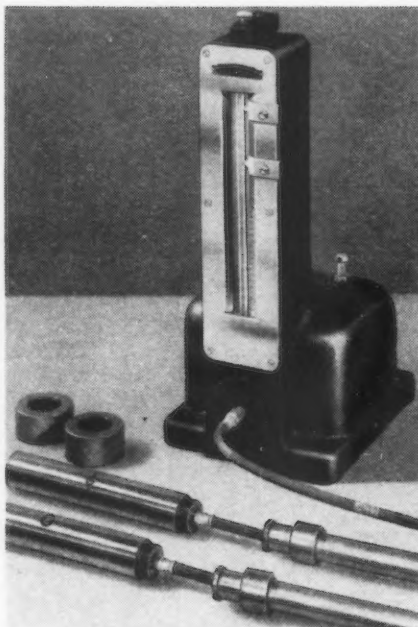


# New Air Gage for Long Bores

**G**UN barrel checking with conventional gages requires a high degree of skill on the part of the operator in order to maintain acceptable standards of precision. In an effort to eliminate this troublesome human equation, maintain maximum precision standards consistently and materially increase the speed not only of gun barrel inspection but of all relatively inaccessible internal diameter checking, the Sheffield Gage Corp. has developed the Precisionaire, a flow type air gage—as contrasted to the pressure type gage. The latter operates on the principle of varying air pressures during the gaging operation, while the flow type instrument registers variations in velocity or volume of air at constant pressure flowing during the gaging operation.

Compressed air from the regular plant supply is the actuating medium and is always held at a constant pressure by the construction of the gage assembly. The volume and velocity of air flowing at any given instant in the gaging operation depends only on the clearance between the gaging nose and the surface of the bore being gaged. The greater this clearance, the greater the volume and the higher the velocity. The nose comes in several forms. Essentially it is a cylindrical plug having a central air channel which terminates in one or more jets in the side of the cylinder just back of its forward end. Where it is desired to check the average diameter or circumference instead of the actual diameter at a given point, as for example in a thin-walled bushing, the air jets in the nose terminate in an annular groove.

Variations in velocity or flow are measured by an indicator float free to move vertically inside an indicator tube in response to the velocity of air flowing around it. The float reacts instantly to changes in velocity and there is no lag nor pumping effect, regardless of the distance between the recording instrument and the part being gaged. Consequently the gaging nose may be placed at the end of a long



**V**ARIATIONS in the flow of air at constant pressure is the operating principle of the Precisionaire gage for measuring gun bores. The special nose pieces are flexibly attached to long handles which are connected by hose to indicator unit.

o o o

length of flexible tubing without affecting the accuracy of the reading.

The instrument is a comparator type and must be calibrated against minimum and maximum size master rings. With pressure on, a minimum master ring is slipped over the gage nose and air pressure is adjusted so that the indicator float will rise to a point just above the bottom of the transparent indicator tube. A sliding marker is set opposite this point. A second sliding marker is used to mark the float position when the maximum master ring is substituted for the minimum. The length of tube between the two markers represents the difference in diameter between the two master rings and hence the selected tolerance of the work being gaged. This length of tube can be calibrated on the adjacent scale in any number of

equal divisions. Any practical degree of magnification is available merely by changing the size and weight of the indicator float.

The Precisionaire is made in two models. Model A is constructed so that it may be presented to the work being gaged, while with model B parts light enough to handle easily are presented to the gage. Model A is applicable to heavier, poorly balanced work parts and those that must be gaged while still in the boring machine. Its gaging nose is connected to the recording apparatus by flexible tubing.

For gun bore gaging a Model A instrument is used, with a special nose flexibly carried at the end of a tubular handle long enough to reach through the bore. The flexible connection between nose and handle eliminates errors that might be caused by misalignment of the handle. The nose actually centers itself. In operation, the inspector passes this gage nose through the unrifled bore in one continuous pass, watching the position of the indicator float as he does so. When checking for an out-of-round condition, the inspector turns the nose of the gage in the bore at a given point.

After the rifling operation a second gaging nose is used to check the diameter of the rifling grooves themselves. The jets of this nose terminate in bosses raised beyond the regular surface of the nose cylinder. These bosses extend into the rifling grooves. The rifling nose is inserted in the bore with the raised bosses in register with two opposite rifling grooves. It is passed through the bore following these grooves. This operation is repeated using each pair of grooves in turn until all have been checked.

As can be seen the instrument uses no hard gaging points and consequently is well suited for inspecting such parts as artillery recoil cylinders, the interior finish of which must not be marred. In fact, the gaging nose may be equipped with bronze or silver rings as a further protection against surface damage.





... U. S. Army Air Corps pursuit planes. These are Seversky P-35's.

# Stainless Steel in Aircraft

Research Staff, Allegheny Ludlum  
Steel Corp., Brackenridge, Pa.,  
R. A. Lincoln, D. Sc.

**E**STABLISHED aircraft builders are reluctant to use stainless steel extensively, as a construction material, partly because of understandable disinclination to change manufacturing methods and partly because the characteristics of the metal are not fully understood or appreciated. However, under the pressure of war-time demands, stainless construction is going to take a spurt—already one newcomer in the aviation industry is laying out plans to start stainless wing construction for war planes, and the expectation is that another full-fledged plant soon will be announced. This article probably is the most sensible analysis ever published of the problems involved in applying stainless to aircraft construction—it also very ably sets forth the physical attributes of stainless steel and emphasizes the changes in specifications necessary to serve the airplane industry satisfactorily. Furthermore, some of the physical data herein have hitherto not been available.—Editor.

**A**LUMINUM and its alloys account for about 75 per cent of the materials used in the construction of airplanes. And, at the present time not more than 10 per cent of the material used in airplane construction is stainless steel. It should be of interest, therefore, to consider such points as where stainless steel is now used, the properties that a material will

have to have in order to be equal to aluminum alloys, stainless steel now available for airplane construction, and what changes in specifications will be necessary to serve the airplane industry satisfactorily.

When the uses to which stainless steel is put in airplane construction are considered, it becomes apparent that most of the applications are

ones in which it is not economical to use any other metal. These uses include applications where resistance to heat is necessary—such as exhaust manifolds and all metal from the fire wall forward. Other uses include such parts as bomb racks, where a combination of resistance to abrasion as well as corrosion is desirable.

Stainless steel has been used to *only a very limited extent in structural members that have to carry stresses*. Aluminum alloys are used almost exclusively for this purpose. The extensive use of aluminum has continued because of its well known strength-weight ratio, because of the experience of the airplane people with its properties, because of a lack of the proper facilities such as dies and presses for forming stainless steel, and because of a lack of knowledge of the properties of stainless steels.

Much has been written and said



about the corrosion and heat resistant properties of austenitic stainless steels. However, relatively little has been said about their mechanical properties in spite of the fact that a variety of very remarkable and useful properties can be obtained. Changes in chemical composition produce considerable differences in the mechanical properties so that within the range of compositions of austenitic stainless steels that can be obtained commercially it is possible to obtain a variety of different type alloys. These range from a relatively soft metal with a low rate of work hardening that lends itself readily to spinning operations, to alloys that are slightly harder and have a rate of work hardening that make them well suited to drawing, and finally to alloys that have a high rate of work hardening that can be cold rolled to very high tensile strengths and still have sufficient ductility to allow strip and sheet to be formed into structural shapes.

The primary requisite necessary in order to obtain an alloy with the desired mechanical properties is to control the composition so that an austenitic structure is obtained that has the necessary tendency to transform into ferrite. For example, with approximately 18 per cent chromium the addition of approximately 12 per cent nickel produces an austenitic structure that at room temperature is completely stable without any tendency to transform into ferrite. When such an alloy is cold worked, the rate of work hardening is relatively low and the increase in hardness is that produced by the cold working of the austenite. If the nickel content of the alloy is lowered to 8 per cent with the chromium content remaining at approximately 18 per cent, an austenitic structure is obtained which at room temperature is less stable than the higher nickel alloy and there exists a tendency for some of the austenite to transform to ferrite. This change is sluggish and will not occur until the metal is cold worked. During cold working this alloy would exhibit a higher rate of work hardening than the 12 per cent nickel alloy because in addition to the hardness obtained through cold deformation of the metal, additional hardness appears to be derived from the transformation of some of the austenite into ferrite. As alloys with successively lower nickel contents are examined it will be

found that the rate of work hardening gradually increases as a result of an increased instability of the austenite which results in an increased amount of austenite transforming into ferrite during cold working. If the nickel content is made too low, then the austenite becomes very unstable and such large quantities of it transform into ferrite that brittle useless alloys are obtained.

*It seems possible that a lack of information of this type by the air-*

mechanical strength that can be obtained with aluminum alloys are a tensile strength of approximately 62,000 lb. per sq. in. and a yield strength of approximately 42,000 lb. per sq. in. When it is taken into account that a given volume of stainless steel is 2.83 times as heavy as the same volume of aluminum alloy, it is evident that in order to have as good a strength-weight ratio, stainless steel must have a yield strength of at least 119,000 lb. per sq. in. and a tensile

TABLE I  
Comparison of Aluminum and Stainless Steel

Density of Duralumin	.....	=	2.8
Density of 18-8 Stainless	.....	=	7.95
Ratio	$\frac{\text{Density of 18-8 Stainless}}{\text{Density of Duralumin}}$	=	$\frac{7.95}{2.8} = 2.83$

Comparison of Mechanical Properties

	Yield Strength, Lbs.	Tensile Strength, Lbs.	Per Cent elongation In 2 In.	Modulus of Elasticity, Lb. Per Sq. In.	Deflection at Yield Strength, Inches Per In.
Hardened Duralumin (with a 1 sq. in. cross-section)	42,000	62,000	12	10,300,000	0.00607
Hardened Duralumin (with a 2.83 sq. in. cross-section)	119,000	175,400		10,300,000	0.00607
Cold rolled stainless steel (0.11 C, 19 Cr, 9 Ni strip, with a 1 sq. in. cross-section)	119,000	145,000	15	27,000,000	0.0064

*craft manufacturers and the resultant failure to obtain a composition best suited to a particular application may have contributed to the fact that stainless steel is used to such a slight extent in the manufacture of airplanes.*

#### Required Characteristics

The major characteristics to be considered in connection with a metal to be used in the aircraft industry are: its strength-weight ratio, its forming properties, and its weldability.

With regard to its weldability, the ease with which stainless steel can be resistance welded is an important point in its favor. It is interesting to compare aluminum and stainless steel from the point of view of their strength-weight ratios. (See Table I.)

As shown in the table, the density of Duralumin is approximately 2.8 while that of 18-8 is about 7.95. Thus the ratio of the density of stainless steel to that of Duralumin is 2.83 to 1. The best

strength of at least 175,460 lb. per sq. in. For example, a 1 sq. in. section of stainless steel of a given length is equivalent in weight to a 2.83 sq. in. section of Duralumin of the same length. In order to have the same weight-strength ratio, the piece of stainless steel would have to withstand 119,000 lb. before arriving at its yield strength because this is the stress at which such a section of Duralumin in its hardened condition would be at its yield strength. Since Duralumin has a modulus of elasticity of approximately 10,300,000 lb. per sq. in. and stainless steel has a modulus of elasticity of approximately 27,000,000 lb. per sq. in., the bar of Duralumin just described would deflect 0.00607 in. per inch at a yield strength of 119,000 lb. total load on a 2.83 sq. in. cross-section, while the bar of stainless steel just described would deflect approximately the same at a yield strength of 119,000 lb. on a 1 sq. in. cross-section. In other words, there would be almost no difference in the de-



flection produced by a given stress.

The point of view has been expressed that it would be undesirable to change from aluminum to stainless steel for airplane parts that have to carry stress, because in order to maintain the same strength-weight ratio the thickness of the part made out of stainless steel would have to have approximately a third of the thickness that it had when made out of aluminum. It is pointed out that rigidity of structure is as important as the strength-weight ratio, and that although the requirements of the strength-weight ratio are met by using thinner gages of stronger stainless steel, the rigidity under compression requirements may not be satisfactorily met because this is not a function so much of the strength of the material as it is dependent on the ratio of the length of the section to the thickness of the section, or in other words, slenderness ratio.

The above line of reasoning is true only if parts designed to be made out of aluminum alloys are made out of stainless steel without any redesigning to take into account the properties of stainless steel. It is true that with a flat piece of Duralumin and a flat piece of stainless steel each having the same length but varying in cross-section so as to have the same weight-strength ratio, the piece of Duralumin would have the greater resistance to buckling under compression because of its greater cross-section area. However, this advantage could be easily overcome and the resistance to buckling can be made to vary at will by simply corrugating the flat piece of stainless steel. This is similar to what will have to be done in order to use stainless steel advantageously in the construction of aircraft.

The airplane industry has grown using aluminum, and during this growth it has naturally adopted designs that are best suited to aluminum. Naturally these designs are not suitable for stainless steel and new ones will have to be worked out for it. In a structural member, resistance to buckling is not a property of the metal being used but it is a property of the shape of the section into which the metal is formed.

Under most conditions it would be rather difficult to persuade a company to change its designs and



... Machining an aluminum wing member in the plant of Bell Aircraft.

methods of fabrication in order to use a new material. However, in this case a change has to be made by the airplane industry in order to meet the demands of the defense program. In order to meet these demands the manufacture of airplanes must be put on a mass production basis. Material must be

used that is available in sufficiently large quantities and that can be handled by mass production methods.

Since, at a time like this, it is possible that at least a part of the large proportion of aluminum and its alloys now used will have to be replaced by another metal, it will



TABLE II  
Mechanical Properties of Stainless Steel Strip

Alloy and Treatment	Yield Strength, Lb. Per Sq. In.	Tensile Strength, Lb. Per Sq. In.	Per Cent Elongation In 2 In.
Cold rolled stainless steel (0.11 C, 19-9 strip, with a 1 sq. in. cross-section)	129,000	145,000	15
Cold rolled stainless steel (0.10 C, 18-8 strip, with a 1 sq. in. cross-section)	140,000	160,000	15
Cold rolled stainless steel (0.15 C, 18.00 Cr, 7.0 Ni, 0.50 Mn strip, with a 1 sq. in. cross-section)	170,000	200,000	15
Minimum strength that stainless steel must have in order to compete with aluminum	119,000	175,000	

be interesting to consider what stainless steel has to offer in this respect.

On the basis of past experience, cold rolled stainless steel strip that has an elongation of approximately 15 per cent, in the 2-in. gage length of the standard tensile test, should have sufficient ductility to make the bends that would be expected in the forming of such parts as angles and I-beams that are used as structural members. So, taking this figure of 15 per cent elongation in the standard 2-in. gage length tensile test as a requirement to be met, it is of interest to consider what mechanical properties can be obtained with stainless steel. (See Table II.)

### 302 Types Not Satisfactory

With 0.11 carbon, and approximately 19 chromium and 9 per cent nickel, by the proper cold rolling, stainless strip can be obtained that together with 15 per cent elongation has a yield strength of 129,000 lb. per sq. in., and a tensile strength of 145,000 lb. per sq. in. With 0.10 carbon and approximately 18 chromium and 8 per cent nickel, cold rolled strip can be obtained with an elongation of 15 per cent, a yield strength of 140,000 lb. per sq. in. and a tensile strength of 160,000 lb. per sq. in. This range of analyses from 18 to 19 per cent chromium and 8 to 9 per cent nickel represents the compositions that would be most likely obtained when ordering regular 18-8 under Type 302 specifications. It can be seen

that the properties that can be obtained with these alloys are not good enough to compete with aluminum on the basis of the weight-strength ratio. It was pointed out previously that in order to compete with Duralumin, stainless steel would have to have a yield strength of approximately 119,000 lb. per sq. in., and a tensile strength of 175,000 lb. per sq. in. Thus, the regular Type 18-8 is slightly better than Duralumin when the yield strength is considered on a weight-strength basis but falls below Duralumin when tensile strength is considered.

Most of the 17-7 Type 301 stainless steel that is made has had sufficient manganese added to it so that the effect of the combined nickel and manganese content is such that an alloy with properties very similar to those described for 18-8 and 19-9 is obtained.

However, if the composition is closely controlled so that the nickel content falls between 7.0-7.2 per cent, the chromium content is 17-18 per cent, the carbon content 0.13-0.15 per cent with the manganese content close to 0.50 per cent, cold rolled strip and sheets can be obtained that have a yield strength of 170,000 lb. per sq. in., a tensile strength of 200,000 lb. per sq. in., with 15 per cent elongation. (See Table III.) When this is compared with the previously stated figures for Duralumin, it is evident that this stainless steel has a tensile strength 15 per cent greater and a yield strength 42 per cent

greater than Duralumin when equal weights of the two alloys are compared on a strength-weight basis. If the chromium content of the above composition limits is held close to 18 per cent, then alloys that have the same desirable properties can be produced that contain 0.10-0.12 per cent carbon. In order to facilitate the solution of carbides during annealing processes prior to cold rolling, such carbon contents are necessary. It is possible to have other variations in composition within the limits of the present Type 301 analysis and still maintain the high mechanical properties stated above. If the carbon content is 0.10 to 0.12 per cent and the chromium content close to 17 per cent, the nickel content must be about 7.5 per cent, or approximately 1 per cent manganese must be present with 7.0 to 7.2 per cent nickel. The only requirement of chemical composition is that the elements be balanced so as to obtain an austenitic structure with the proper tendency to transform into ferrite.

It is obvious that the above composition limits would be difficult to meet in commercial production. However, these are the composition limits that must be met if the above mentioned desirable properties are to be obtained and the present chemical specification of a minimum of 7 per cent nickel still met.

Investigations that have continued over a period of a number of years in the Allegheny-Ludlum research laboratory have shown that a relatively wide range of compositions exists with nickel contents of less than 7 per cent, which have the same desirable mechanical properties described above.

### New Compositions Developed

The narrow limits of compositions just described, lie on the upper edge of this relatively wide range of compositions. The wide range existing at nickel contents of less than 7 per cent has apparently been overlooked, up to the present time, because of the incorrect assumption that more than 7 per cent nickel is necessary in order to produce an austenitic structure sufficiently stable to be useful. Allegheny - Ludlum experiments show that alloys falling in the range of compositions 0.09-0.13 carbon, 0.50-0.70 manganese, 18-19 chromium and 6.25-7.0 nickel have the same high mechanical properties described above after cold rolling.

TABLE III  
Compositions With Which High Mechanical Properties Can Be Obtained

Carbon, Per Cent	Manganese, Per Cent	Chromium, Per Cent	Nickel, Per Cent
0.13-0.15	0.50-0.70	17-18	7.0-7.2
0.10-0.12	0.50-0.70	17.90-18.25	7.0-7.2
0.10-0.12	1.20-1.40	17.00-17.40	7.0-7.2
0.09-0.13	0.50-0.70	18-19	6.25-7.0



An example of the mechanical properties that can be obtained with an alloy in this range of compositions is shown by the data in Table IV, obtained from an alloy containing 0.11-0.12 carbon, 18.55 chromium, 6.84 nickel, and 0.50 manganese.

It has been found by Allegheny-Ludlum that in certain ranges of composition changes in the concentration of chromium, the stability of the austenite with respect to its tendency to transform into ferrite was effected in a manner that is contrary to the relationship generally believed to be true. It has been generally accepted that increasing the chromium content makes the austenite less stable. However, in the alloys containing from approximately 5.5 to 7.5 per cent nickel and chromium contents in the range from 17 to 21 per cent, increasing the chromium content produced an alloy that appeared to have more stable austenite, when judged on the basis of work hardening and mechanical properties. (See Table V.)

The properties of an alloy containing 0.11-0.12 carbon, 18.55 chromium, and 6.84 nickel have just been considered. As an example of the above described behavior, compare these properties with those for an alloy containing 0.11 carbon, 20.88 chromium, 6.66 nickel, and 0.50 manganese. In the annealed condition this latter alloy has a yield strength of 40,000 lb. per sq. in., a tensile strength of 105,000 lb. per sq. in., and an elongation of 65.0 in a 2-in. gage length.

As shown before, the former alloy has a yield strength of 38,000 lb. per sq. in., a tensile strength of 124,000 lb. per sq. in., and an elongation of 86.0 per cent. After cold rolling 30 per cent, the alloy containing 20.88 chromium had a yield strength of 125,000 lb. per sq. in., a tensile strength of 167,000 lb. per sq. in., and an elongation of 25 per cent, while the alloy with 18.55 chromium had a yield strength of 151,000 lb. per sq. in., a tensile strength of 193,000 lb. per sq. in., and an elongation of 25 per cent. Thus, the alloy with the higher chromium content appears to be made up of austenite that is more stable than that in the lower chromium alloy. It can be seen that the tensile strength in the annealed condition as well as the rate of work hardening of the higher chromium alloy are less than the

TABLE IV  
Mechanical Properties That Can Be Obtained With Alloys Containing Less Than 7.0 Per Cent Nickel

Treatment	Yield Strength, (0.2 Per Cent Set) Lb. Per Sq. In.	Tensile Strength, Lb. Per Sq. In.	Per Cent Elongation In 2 In.
1950 deg. F., air cool	38,000	124,000	86.0
Cold rolled 12.5 per cent	60,000	152,000	55.0
Cold rolled 22.5 per cent	118,000	176,000	36.5
Cold rolled 30 per cent	151,000	193,000	25.0
Cold rolled 41.5 per cent	184,000	214,000	16.0

equivalent properties in the low chromium.

On the basis of the above data it can be seen that in order to obtain high tensile stainless steel with the best mechanical properties and at the same time have a sufficiently broad range of chemical compositions so that it can be made on a commercial basis, it will be necessary to have the minimum nickel content of 7 per cent exist-

classification will have to be adopted that coordinates the various tempers with yield strengths and allows the tensile strengths to fall where they may, or a different relationship between temper, yield strength, and tensile will have to be used for compositions showing different rates of work hardening. (See Table VI.)

As an example of what might be encountered if the various tempers were specified on the basis of ten-

TABLE V  
Effect of Varying Chromium Content in the Range of Compositions 5.5-7.5 Per Cent Nickel and 17-21 Per Cent Chromium

Alloy	Treatment	Yield Strength, Lb. Per Sq. In.	Tensile Strength, Lb. Per Sq. In.	Per Cent Elongation In 2 In.
18.55 Cr, 6.84 Ni	1950 deg. F., air cooled	38,000	124,000	86.0
18.55 Cr, 6.84 Ni	Cold rolled 30 per cent	151,000	193,000	25.0
20.88 Cr, 6.66 Ni	1950 deg. F., air cooled	40,000	105,000	65.0
20.88 Cr, 6.66 Ni	Cold rolled 30 per cent	125,000	167,000	25.0

ing in most specifications lowered to about 6 per cent.

In order to specify the desired mechanical properties in these alloys to best advantage it will be necessary to discard the old classification of tempers which connects the various tempers with tensile strengths. In place of this, some

sile strength alone, consider some of the properties already described. When considering the properties of regular 18-8 and 19-9, it was pointed out that in this range of compositions, cold rolled strip can be obtained that has a tensile strength of 145,000-160,000 lb. per sq. in., and a yield strength of 129,000-

TABLE VI  
Effect of Composition on the Relationship Between Tensile Strength and Yield Strength

Alloy	Treatment	Tensile Strength, Lb. Per Sq. In.	Yield Strength, Lb. Per Sq. In.	Per Cent Elongation In 2 In.
302 Stainless steel (0.11 C, 19-9)	Half hard type	150,000 (min.)	110,000 (min.)	8.0 (min.)
18.55 Cr, 6.84 Ni	Cold rolled 12.5 per cent	152,000	60,000	55.0
18.55 Cr, 6.84 Ni	Cold rolled 22.5 per cent	176,000	118,000	36.5
302 Stainless steel (0.11 C, 19-9)	Annealed	95,000	38,000	65
18.5 Cr, 6.8 Ni	Annealed	124,000	38,000	86



**TABLE VII**  
Tests on Strip in the Longitudinal and Transverse Directions

Direction Tested	Tension			[Compression]
	Yield Strength, (0.2 Per Cent Set) Lb. Per Sq. In.	Tensile Strength, Lb. Per Sq. In.	Per Cent Elongation In 2 In.	Yield Strength, (0.2 Per Cent Set) Lb. Per Sq. In.
Longitudinal	174,800	199,200	16.0	169,800
Transverse	184,300	203,000	13.0	199,900

140,000 lb. per sq. in., with an elongation of 15 per cent. Thus, with half hard 18-8 strip, when a minimum tensile strength of 150,000 lb. per sq. in. is specified, a minimum yield strength of 110,000 lb. per sq. in. is obtained. However, if the alloy with 18.55 per cent chromium and 6.84 per cent nickel were supplied to meet a minimum tensile strength of 150,000 lb. per sq. in., a yield strength of only 60,000 lb. per sq. in. might be obtained. This latter alloy can be supplied with a yield strength of 110,000 but in order to obtain it a tensile strength of 175,000 lb. per sq. in. must accompany it. With these properties an elongation of 36 per cent is obtained.

Thus it can be seen that this composition has properties superior to the regular 18-8, but that in order to specify the desired properties it will be necessary to have specifications different from those now in existence for regular 18-8.

#### Yield Strengths Similar

It is interesting to generalize a little on a comparison of the mechanical properties of the different compositions in order to explain these variations. In the annealed condition all of the austenitic chromium nickel steels with the same carbon content have approximately the same yield strength. This holds true for the 18.5 per cent chromium, 6.8 per cent nickel analysis, as well as for the regular 19-9 composition. However, beyond the elastic range where plastic deformation takes place in the tensile test the various rates of work hardening of different compositions influence

the stress at which breaking occurs. The compositions with the greatest rate of work hardening show higher breaking strengths than the ones with lower rates of work hardening. Thus, the tensile strength of the annealed 19-9 composition is approximately 95,000 lb. per sq. in., while that of the 18.5 per cent chromium, 6.8 per cent nickel composition is approximately 124,000 lb. per sq. in., although the yield strengths of the two are approximately the same. In other words, the yield strength is dependent on the amount of cold work that the alloy has had before being subjected to the tensile test.

In the previously cited case where a wide difference in yield strengths existed at 150,000 lb. per sq. in. tensile in two different compositions, the 18.5 per cent chromium, 6.8 per cent nickel composition required only 12.5 per cent reduction in cold rolling in order to attain a tensile strength of 150,000 lb. per sq. in., while the 19-9 composition required approximately 35 per cent cold reduction.

When the former composition is given 35 per cent cold reduction, its tensile strength becomes 195,000 lb. per sq. in. and its yield strength 165,000 lb. per sq. in., with 20 per cent elongation. Allegheny-Ludlum experience has been that approximately 30 per cent reduction in thickness by cold rolling is necessary in order to raise the yield strength so that it is within 75 per cent of the tensile strength.

In considering the use of strip, the mechanical properties of which

have been obtained through cold rolling for applications as load bearing structural members, it is natural that attention be given to the variations in properties in different directions resulting from the rolling. Such variations in properties with direction would naturally be different with different lots of material depending primarily upon processing conditions. Table VII shows the results of tests conducted in tension as well as in compression on samples taken from strip in both the longitudinal and the transverse directions. The composition of the material tested was 0.12 carbon, 0.47 manganese, 18.01 chromium, and 6.96 nickel. The strip was cold rolled in the mill as a regular commercial material to a thickness of 0.027 in. It was then stress relieved at a low temperature and tested.

Approximately the same results have been obtained by a different laboratory using a different lot of strip material containing 0.11 carbon, 1.32 manganese, 17.15 chromium and 7.17 nickel, which was cold rolled to a thickness of 0.035 in. Tests were made (see Table VIII) in the longitudinal and transverse directions in both tension and compression on the material, in the as rolled condition and after stress relieving as well.

#### Limits of Usefulness

It should be emphasized here that the composition containing less than 7 per cent nickel has no particular advantage at low hardnesses. In this discussion most of the attention has been centered on the high strength material that can compete advantageously with aluminum alloys on a strength-weight ratio basis. However, there are many applications in airplane construction where annealed material and material with a yield strength up to 100,000 lb. per sq. in. will be needed. In these applications it should be remembered that the regular deep drawing grades (Types 301 and 302) and the free spinning grade (Type 304) will perform as well as any composition in these applications. Therefore, specifications should be written so that any of the regular grades of 18-8 can be supplied for applications requiring softer material and the less than 7 per cent nickel material should be specified for applications requiring strip with a yield strength greater than 100,000 lb. per sq. in.

**TABLE VIII\***  
Tests Made on Strip in the Longitudinal and Transverse Directions

C	Tension			[Compression]
	Yield Strength, (0.2 Per Cent Set) Lb. Per Sq. In.	Tensile Strength, Lb. Per Sq. In.	Per Cent Elongation In 2 In.	Yield Strength, (0.2 Per Cent Set) Lb. Per Sq. In.
Longitudinal (as rolled)	162,000	195,000	15	146,000
Transverse (as rolled)	140,000	201,000	10	185,000
Longitudinal (stress relieved)	181,000	198,000	14	163,000
Transverse (stress relieved)	172,000	202,000	10	201,000

\* Courtesy, Mr. Russell Franks, Union Carbide & Carbon Research Laboratory.



# Modern Spinning

## —A New Frontier in Forming Metals

**S**PINNING today has branched out into the hard modern alloys, and ranges through sizes, shapes and weights of metal unheard of a few years ago. This article thus is particularly timely in that it tells of some recent spinning accomplishments that demonstrate the ver-

satility and economy of this forming technique. The author is recognized as an authority for this type of work and holds himself in readiness to help or advise those fabricators having technical or cost problems which may be solved through the application of spinnings.

**N**OT since the introduction of welding, has industry at large been faced with a comparable development in fabricating methods that carries the great potential for reducing costs that are found today in the growth of spinning as a forming technique. Hardly one man in a hundred understands what spinning already is doing—not one man in a thousand can readily recognize the forming opportunities that lend themselves to this low cost method of fabrication.

With the engineering viewpoint in mind a few examples of spinning's recent contribution to metal fabrication are discussed herein. Repeatedly structural strength has been increased and production costs lowered by means of this method of forming metal.

The importance of these two characteristics of spinning are well illustrated in the construction of the

streamlined Texaco tank truck shown on page 42. A total of 36 segments of spinnings is employed to deliver the flowing simplicity of line that distinguishes this custom built body. The specific points where spinnings were applied are also shown in the illustration. Some of the chief steps and methods taken to produce them are shown in the other illustrations on the same page, the parts identified on the truck being keyed to the drawings having the same alphabetical letter. All of these spinnings are formed from steel, which while light, is also very strong.

At this point it is of interest to analyze these spinnings and see how they were planned, made and used. In all cases, it must be remembered that the spinnings were produced over wooden forms.

Corners on the apron (A) were

formed from segments of spinnings having several radii. The illustration shows a hemispherical spinning which was cut pie fashion into five parts. This particular segment was used as shown (A) in the front end of the apron. A bowl-shaped spinning (F) was quartered to form the radically curved rear section. These two spinnings were then butt welded and ground flush to the other formed and hammered parts and the body sheets to complete the streamlined appearance of the apron.

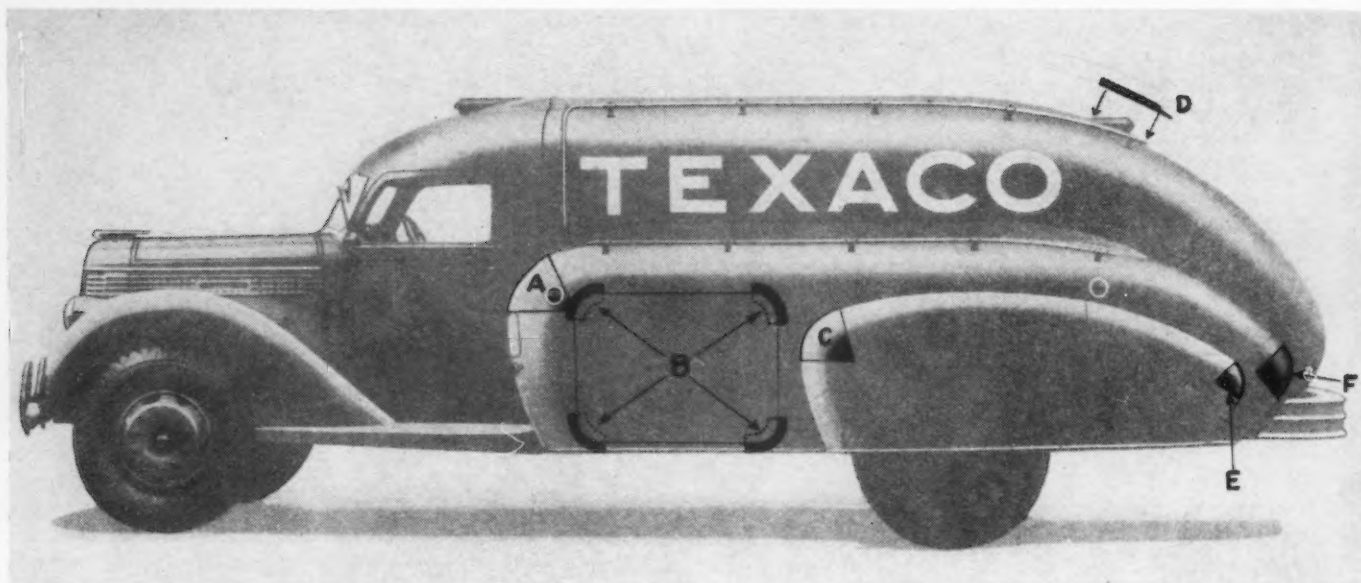
To form the stop flange corner radius of the door (B), spinnings were effectively applied as indicated. A simple ring spinning was made and then quartered. Butt welding to the main body of the apron and grinding flush were then the next steps.

Planned very much along the same procedure as the methods involved in the forming of the apron corner, were the spinning operations carried out to make the extreme curves on the front and rear of the fender. Because of the different radii required, two spinnings had to be used. For the front section (C), a pan-shaped spinning was made, and then cut into five parts. Drawing E shows how a similar pan spinning was likewise handled to form the corner at the fender's end. These sections were then butt welded into place.

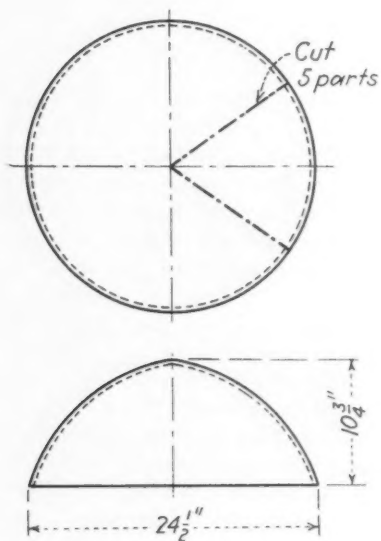
One of the most interesting opportunities to employ a spinning to practical advantage was offered in the con-

By THEODORE SALOW, JR.  
*General Manager, Milwaukee Metal  
Spinning Co., Milwaukee.*

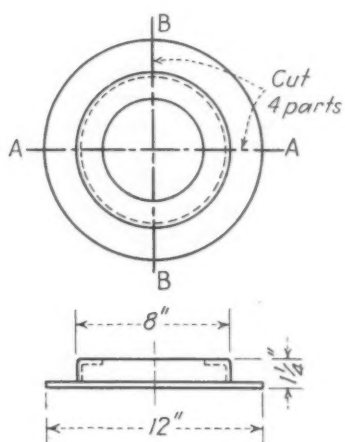




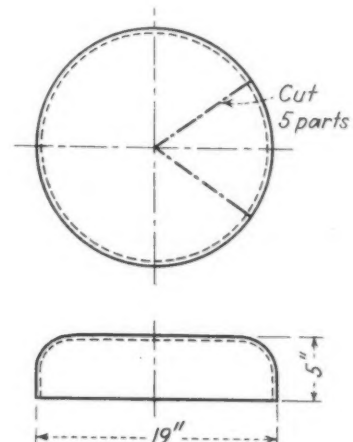
A total of 36 segments of spinnings has been incorporated in this streamlined tank truck. Below are sketches of some of these spinnings, keyed to point of application in the truck. There are 19 applications in the interior piping not detailed in this article. (Photo courtesy of the Heil Co., Milwaukee.)



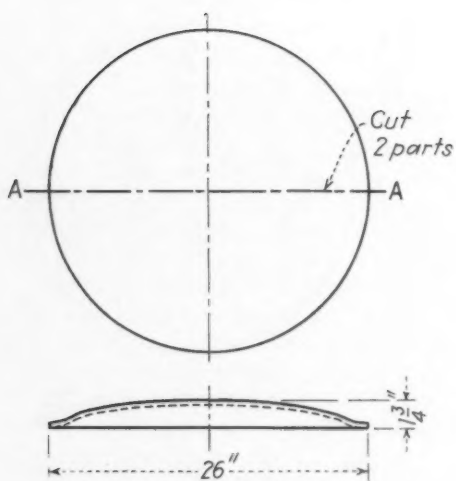
A



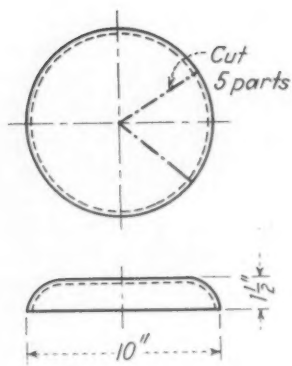
B



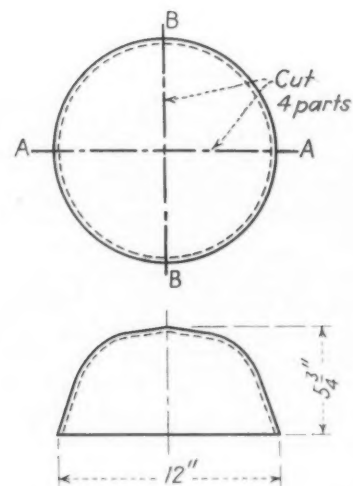
C



D



E

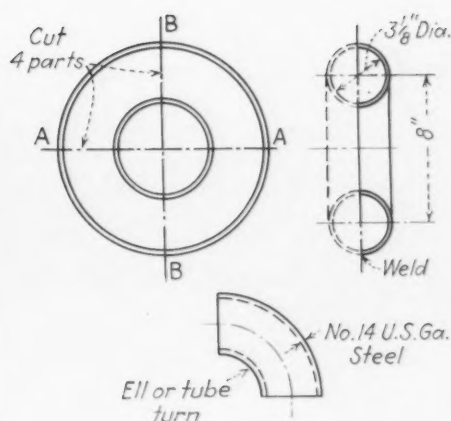


F



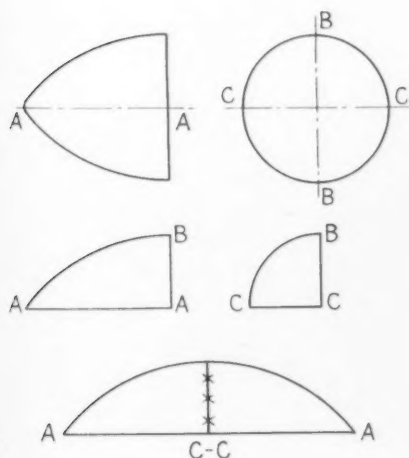


THIS sketch shows type of spinning used to construct tube turns for the tank truck. The wash drawing shows one of several installation locations in the pipe lines of this truck.



struction of the catwalk. Here the end section (D) was made from a very shallow circular spinning which was bisected. In this case, it was possible to spring the flat flange downward where necessary to fit the contour of the tank proper and butt weld it to the body.

Spinnings were also successfully applied on this truck to form tube turns in the interior piping, as shown above. The use of spinnings here contributed to a desirable saving in weight, and were cheaper to produce than the conventional method of forming a turn. The drawing on this page shows how spinnings were used. Two circular, or ring spinnings, were formed, then welded together to form a "doughnut." The "doughnut" was then cut into segments at the required angles, forming a highly satisfactory light gage elbow of 0.078-in. steel.



WASH drawing shows spun section of radiator shell as used by fire fighting equipment manufacturer. Sketch shows details of the spinning employed to construct this radiator shell.

It must be emphasized here that this type of spun and welded tube turn is recommended only for low pressure work.

While these were the only spinnings used on this truck, it does not, by any means, exhaust the possibilities of where spinnings can be used on special body work. Another excellent example of employing spinnings to practical advantage is illustrated by the case of a radiator shell section spun for a manufacturer of fire-fighting apparatus. Here spinnings were easily adaptable because they fit into the particular method followed in the construction of the hood and the radiator shell.

The operation is shown by the sketch and drawing on this page. A simple cone shaped spinning was formed on a wood block, then quartered and butt welded. This manner



of forming the radiator shell was completely satisfactory, and produced a decided saving for the manufacturer over the method previously followed.

This discussion and illustration of practical applications of metal spinning indicate that spinnings can be used almost all of the way across the drawing board. In the case of this specific special body work, distinct and wholly new innovations were devised to meet the special construction problems. But while streamlining lends itself naturally to spinning, this technique of forming metal should, by no means, be ruled out of consideration in approaching fabrication problems concerned with conventional or run-of-the-mine forming operations.

Another example of the diverse application to industry of spinning is a special transmission housing recently required by a manufacturer of farm equipment—one that had to be developed from a wholly new angle as far as its relation to any other product of the line was concerned. On the surface, this job did not seem in any way to lend itself to spinning. However, an analysis of the blue prints showed otherwise.

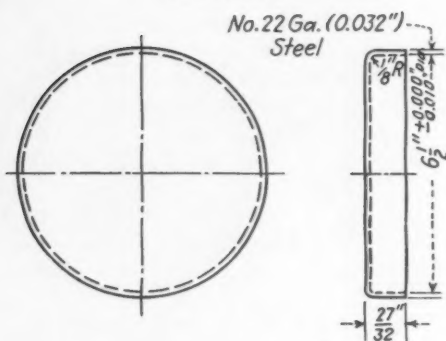
This transmission housing is illustrated on page 45. The main body of this transmission housing was recognized as a spinning job by its cup or bowl shape. A wooden block was made for forming, and 14 U. S. gage steel was shaped, as indicated by the cross-section at the right in the sketch on page 45. This spinning was later cut into two sections, top view, as shown by the portion above A-A, and below B-B. The sketch to the left shows how the flanges were welded to these sections, and a formed end plate was further welded to the large end to complete the housing.

So far, this discussion has centered around special work—unusual cases that in an average shop seldom or never come up in a year's time. These jobs are extraordinary for spinning too, for the big bulk of products in a spinning shop consists of the everyday garden variety of jobs that are on everybody's drafting board. Here too, spinning can offer important production contributions—frequently answers the unending industrial prayer to make it both cheaper and better at the same time. Spinning can do this quite regularly when the type of product and quantities involved fall into the natural range of spinning's full efficiency. A study of several jobs that can be successfully produced by vari-



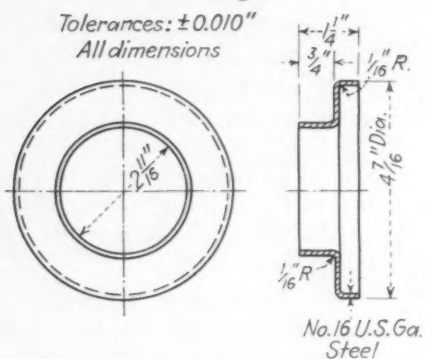
## Comparative Production Costs for Three Types of Jobs

### Steel Lid



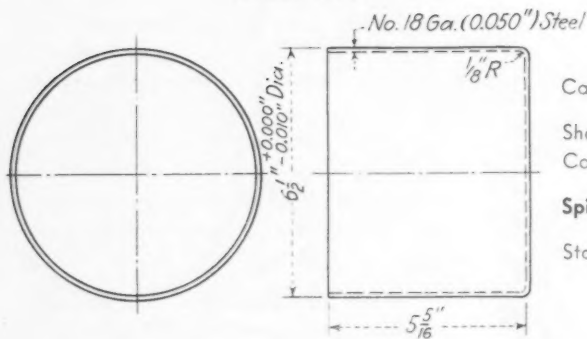
	Cost Per Piece					Tool Cost
	Lot of 100	Lot of 500	Lot of 1000	Lot of 5000	Lot of 10,000	
Casting and Machining	\$0.345	\$0.31125	\$0.2844	\$0.2675	\$0.2575	\$50.00
Sheet Metal Construction (Welding)	0.55	0.46	0.38	0.34	0.29	\$ 0.00
Spinning	0.15	0.129	0.119	0.099	0.091	\$6.50
Stamping	0.074	0.0373	0.0324	0.0285	0.0261	\$220.00

### Oil Flinger



Casting and Machining	0.29	0.25875	0.235	0.22125	0.21125	\$50.00
Sheet Metal Construction (Welding)	IMPRACTICAL					
Spinning	0.27	0.24	0.22	0.21	0.195	\$26.13
Stamping	0.102	0.051	0.044	0.04	0.036	\$445.00

### Steel Can



Casting and Machining	0.83	0.73	0.675	0.66	0.596	\$70.00
Sheet Metal Construction (Welding)	1.10	0.90	0.75	0.69	0.64	\$25.00
Spinning	0.80	0.69	0.612	0.59	0.57	\$12.50
Stamping	0.38	0.141	0.128	0.113	0.102	\$585.00

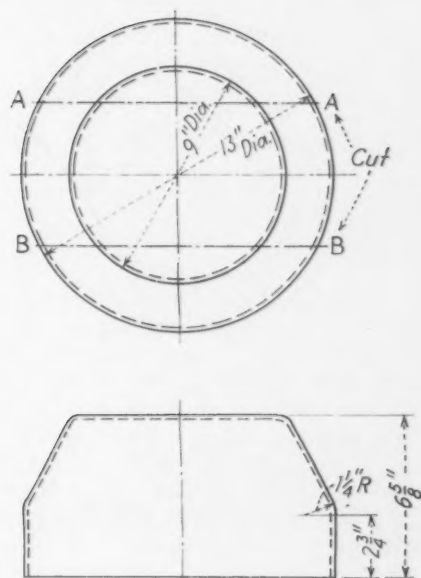
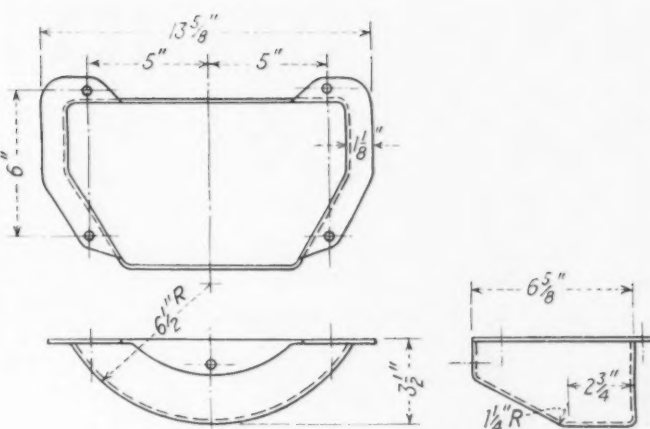
## Comparison of Spinning and Stamping Costs

(Per piece cost with tools amortized)

		Lot of 100	Lot of 500	Lot of 1000	Lot of 5000	Lot of 10,000
Steel Lid	Spinning	\$0.215	\$0.142	\$0.1255	\$0.1003	\$0.0917
	Stamping	2.274	0.4773	0.2524	0.0725	0.0481
Oil Flinger	Spinning	0.5313	0.2923	0.2461	0.2152	0.1976
	Stamping	4.552	0.941	0.489	0.129	0.0805
Steel Can	Spinning	0.925	0.7 5	0.6245	0.5925	0.5713
	Stamping	6.23	1.311	0.713	0.23	0.1605



SPINNINGS were made as shown here, cut apart, and then welded together to form a transmission housing.



ous methods of forming metal turns up some interesting data for those who want to know what costs are, and how they compare.

Examples given in the tables on page 44 are good general illustrations of three types of forming work—making a steel lid, an oil flinger and a deep drawn can. Alternate ways of fabrication most generally considered are casting, sheet metal construction, stamping and spinning. There are, of course, other methods of production, but they need not be considered here because, on a basis of comparative costs, they are wholly out of line.

In considering which of the four methods it is most economical to adopt, it is also necessary to consider other factors—thickness of metal, weight, tolerance, etc., which must meet the specifications of the pieces in question. A casting requires a min-

imum thickness of 3/16 in. Sheet metal construction demands a thickness of at least 0.0359 in. (20 U. S. gage) for economical welding. Both spinning and stamping can meet the specification of 0.0299 in. (22 U. S. gage).

As regards tolerance, casting requires 1/16 in., sheet metal construction 1/32 in., spinning and stamping 0.010 in., a factor which is important where exacting measurements must be held.

On these three jobs—the forming of a steel lid, an oil flinger and a deep drawn can, the cost analyses are laid out to show production comparison in various lots. Thus the five columns tell an interesting cost per piece story that presents fair facts and not biased argument. Tool costs are also given in column six—and of course the effect of amortizing this expense can-

not be overlooked. Obviously all production charges must be added before a true accounting of costs can be reached.

The lower table on page 44 shows the effect of amortized tool costs on these jobs as they affect spinning and stamping. This study is made because many people regard spinning and stamping as strictly competitive methods of forming. This is a fallacy—is no more true than a conclusion that the sun and moon compete in lighting the earth. The non-competitive character of these two methods of forming metal is clearly evident by an examination of the facts. The truth is that in small quantities spinning is the most economical method of fabrication; in large quantities, stamping costs less money. Each does the job best according to the quantity of finished pieces wanted.

## Handbook of Special Steels Now Available

THE Allegheny-Ludlum Steel Corp., Pittsburgh, has just issued an elaborate and carefully prepared book on special steels—their properties, uses and fabricators. To assist the user in selecting the proper type of tool steel for a given application, the steels are divided into five groups based upon the nature of the work for which they are intended, i.e., high speed, hot work, shock resistant, die, and carbon and low alloy steels. Charts show the analysis and properties of the steels, the standard temperatures

for the heat treatment of each grade, and application of the grades in each group.

Data also are given on sizes, weights and prices of carbon drill rods, high speed drill rods and tool holder bits. Similar data are presented for nitralloy steels and the nitriding process.

In another section of the book, the more important types of stainless and heat resisting steels are listed. Charts give the complete analysis of each grade, its general properties, its mechanical proper-

ties at room temperatures, and the temperature ranges for hot working and heat treating. Other data show the general characteristics of these steels, together with some suggestions as to their application, and still another section tabulates the resistance of the most widely used grades to attack by various media.

The book also contains information on electrical sheets, and lists standard tables on temperature conversion, weights of steel, S.A.E. grades, etc.



# New Roll Shop in Full

**F**ACED with increased demand for heavier cast steel and iron rolls and constantly expanding production, the Ohio Steel Foundry Co. has erected a large new roll machine shop at Lima, Ohio, which offers much of interest as regards equipment, production practices, and conveniences for the operating personnel.

The company entered the roll making business about ten years ago with the realization that modern production and heat treating equipment would be among its foremost assets. About two years ago Holl-O-Cast rolls, made by a patented process, were announced and have had widespread acceptance.

The advantages of the smaller mass that is obtained by putting a 6-in. or 8-in. hole through a 40 to 60-in. roll can be readily appreciated. Segregation, which increases with the size of the mass of steel poured, is lessened. Also there are definite heat treating advantages.

The new building, completed just prior to the present high rate of rolling mill activity, enables the company to concentrate most of its roll manufacture at Lima and to adopt straight line production. The structure, which is adjacent to the foundry building, is well lighted, with controlled temperatures and ventilation, and with roomy lockers,

lunch facilities and other improvements for the men.

The large lathes used in turning the steel mill rolls extend side-by-side almost the length of the building. All but one of the nine lathes were designed and built by the company. Two lathes handle 60-in. diameter rolls, which weigh up to 100,000 lb. each. One lathe handles rolls up to 44-in. diameter. Six lathes handle rolls up to 36-in. diameter. When placed in the lathe, the roll remains there until turning is completed. Each of the large lathes is based upon an individual concrete base, insulated from its neighbor to prevent excessive vibration which would affect the turning operation.

If the roll must be ground, it is taken to a new 60-in. Landis roll grinder at the northeast end of the building, near the shipping department. This grinder, duplicated only once before, is mounted upon its own special mat, in much the same fashion as the lathes. The equipment includes an attachment for grinding taper necks.

Slabbing and broadside rolls as

large as 45 in. in diameter, 120-in. body length, having an overall length of 228 in. and often weighing as high as 81,000 lb. each, are ground on this 60 x 312 in. roll grinder. Backing-up rolls up to 56 in. in diameter and weighing 65,000 lb. to 100,000 lb. are also easily taken care of. Aside from these a great number of rolls varying in size down to 19 in. in diameter, 24 in. in body length with an overall length of 72 in. and weighing but 4000 lb. are precision ground on this machine. The different types of metals used in the rolls—nickel, chromium and molybdenum alloy steel, varying in hardness from 40 to 70 scleroscope and alloy iron varying in hardness from 55 to 85 scleroscope—are ground equally well. The machine is equipped to precision grind the bodies of rolls straight, crowned or concaved, as desired.

Machining of the universal couplings is done on a Morton universal machine which can either bore or cut. Two Morton shapers are used to cut the cope wabblers in the roll.

Foundry practice in the manufac-



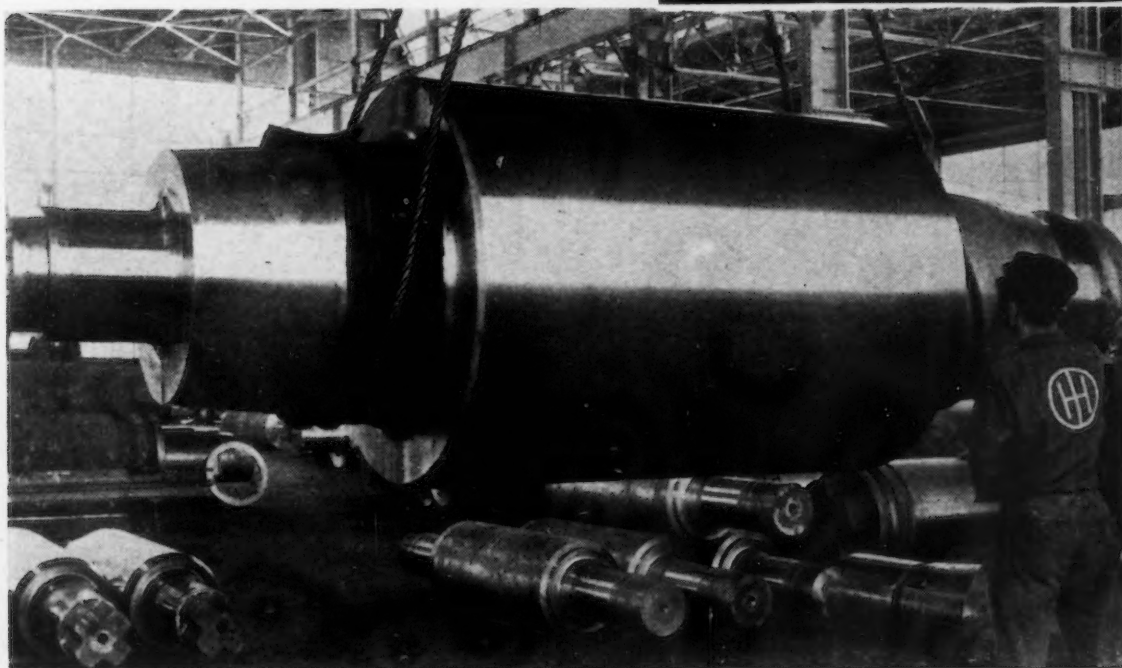
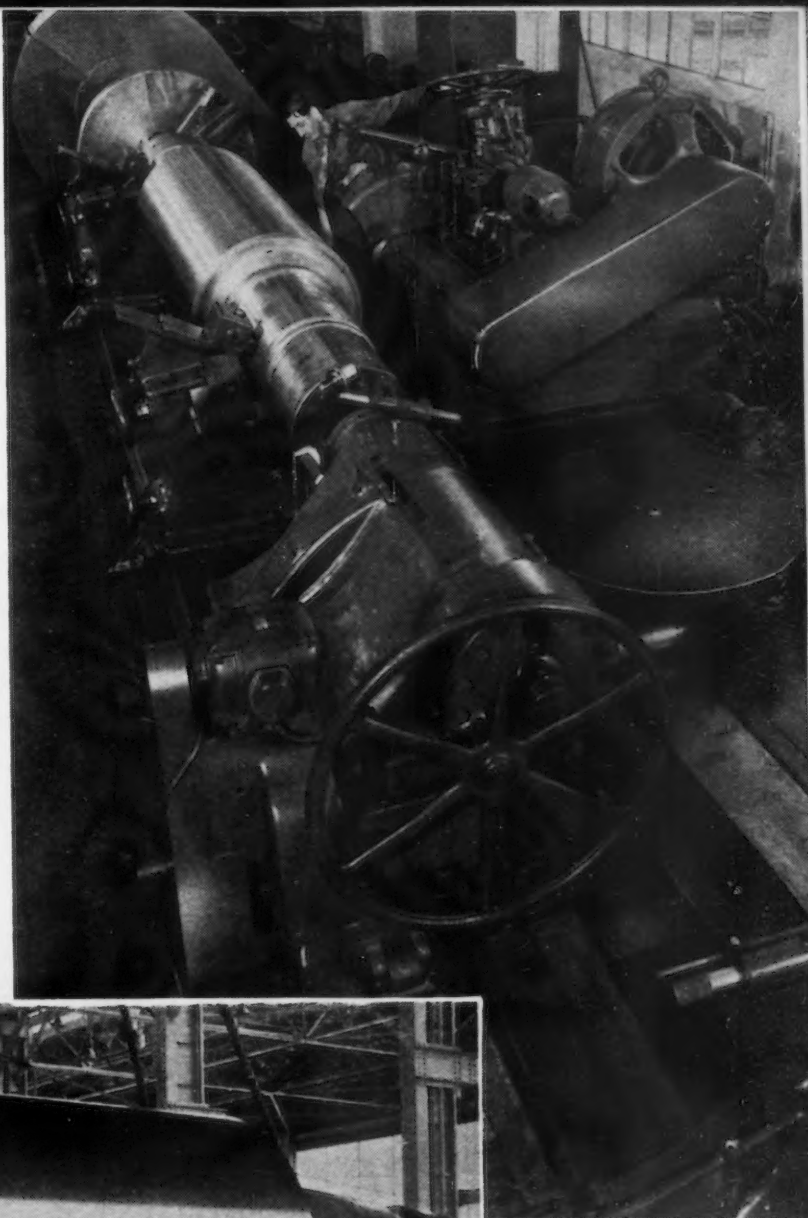


# Production

ture of rolls contains much of interest. The rolls are cast on end. The foundry is equipped with two open-hearth furnaces. In pouring heavy steel rolls, both furnaces are tapped at one time into one ladle, and then poured into the mold. There are two deep pouring pits.

After being cast, shaken out and cleaned, the rolls go to the heat treating and annealing departments where facilities are of especial interest. On some rolls approximately two weeks are required for heat treatment, one week being required for annealing. The company has five annealing bases each 9 x 24 ft., and four covers. The furnaces are

o o o  
The new 60-in. Landis roll grinder. This huge machine also has an attachment for grinding taper necks. The grinder, duplicated only once before, is mounted on a special mat.  
o o o



o o o  
View of a large backing-up roll being transported in the new roll machine shop. Other sizes of Holl-O-Cast rolls are in the background.  
o o o

bell type Surface Combustion units. All are automatically controlled by latest type Leeds & Northrup Micromax recorders and controllers.

After annealing, the rolls are cleaned up and the sharp corners removed. Heads are cut off and the rolls roughed down close to size for heat treating.

There are four gas fired heat treating furnaces of different sizes, the largest being 9 x 30 ft., all automatically controlled by the equip-

ment mentioned above. The principal furnaces are all controlled from one centrally-located room. Doors of the furnaces are operated electrically and each car is pulled in or out by its own electric motor.

There are four small gas fired furnaces for treating small rolls on end.

Iron for iron rolls is melted in an air furnace adjacent to the main foundry. The small building housing the furnace has a sliding roof

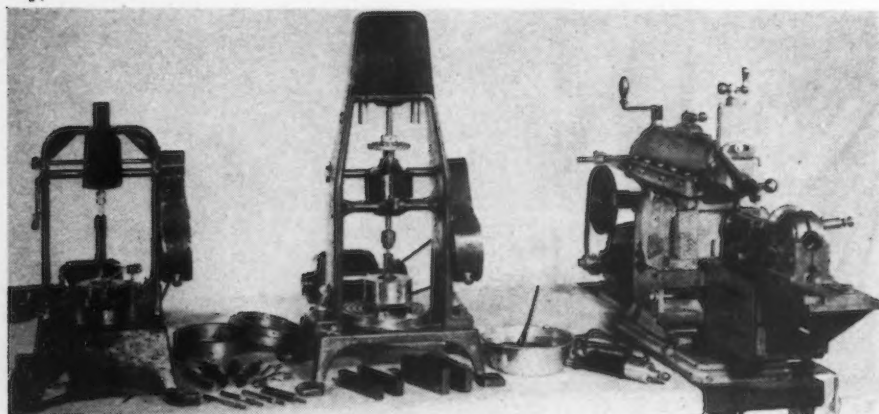
and charging is done from the top. The company realized that if the furnace were located inside the foundry building, many loads of pig iron and scrap would have to be hauled inside the building. However, at its outside location and with the sliding roof, charging can be done by the yard crane and magnet with only one load of hot metal to be taken to the roll pouring pit. The location greatly improves working conditions also.



# How to Finish

## Carbide

## Drawing Dies



FINISHING equipment for carbide drawing dies introduced by Carboloy Co., Inc. At left, angle lapping machine; center, bearing finishing machine; right, shaper for machining of laps. Next to the shaper is the electric hand polishing tool.

**D**EVELOPMENT of a complete line of equipment for finishing and servicing of Carboloy drawing dies for producing special shapes of bar and rod—such as hexagonal, square, rectangular, half-round, etc., is announced by Carboloy Co., Inc.

Coincident with the announcement, Carboloy is offering carbide drawing dies in low-priced cored or pre-formed state for rapid finishing to desired shape. The line comprises standard hexagon and square rough cored dies available in a wide range of sizes. These dies are so designed as to require a minimum of stock removal for finishing to the usual sizes, the cored shapes having a 16 deg. approach angle and a 30 deg. back relief angle.

Essentially the equipment consists of a die-bearing sizing machine, a die shaping machine, a hand polishing tool and an adap-

tation of an Atlas bench shaper for machining the required mild steel laps which are used in a combination with various grades of boron carbide or diamond powder. All three of the machines designed for working the dies have a short high speed reciprocating stroke obtained from an eccentric.

To rough and finish the bearing of the dies, laps of the same shape as the bearing, but with 0.010-in. taper, are used. Laps for producing entrance, approach, bell and back relief angles also are of the same shape as the cross-sections they are to produce, but are smaller in size. In lapping the angles, the lap is reciprocated vertically by power and at the same time, die and spindle are rotated slowly by hand. Spring tension maintains a uniform pressure of the lap against the portion of the die at the rear of the machine. The finishing or polishing hand tool also employs laps, reciprocated

with a short stroke at high speed by an electric motor.

To finish a die with this equipment, the die is first paced in the bearing sizing machine, lapped to within 0.010 in. of finished size with 100-grain boron carbide, and to 0.005 in. of size with 220-grain boron carbide. It is then placed on the die shaping machine and the various angles are rough lapped with 220 boron carbide. The bearing is then semi-finish lapped on the sizing machine to 0.002 in. using No. 5 diamond powder. The profile is next blended with the hand tool, using No. 5 powder. The bearing is next lapped to 0.0001 in. of size, using No. 6 diamond powder and then finished with a wood lap using the same powder. Alternately with this final operation, the hand tool is used to reblend and repolish the profile of the die, using No. 6 diamond powder.



# New Equipment

## Machine Tool Review . . .

This article deals with the latest developments in special and general lathes, with developments in grinders, in honing and lapping machines, also in hobbers and millers and in gun rifling and shell tapping machines.

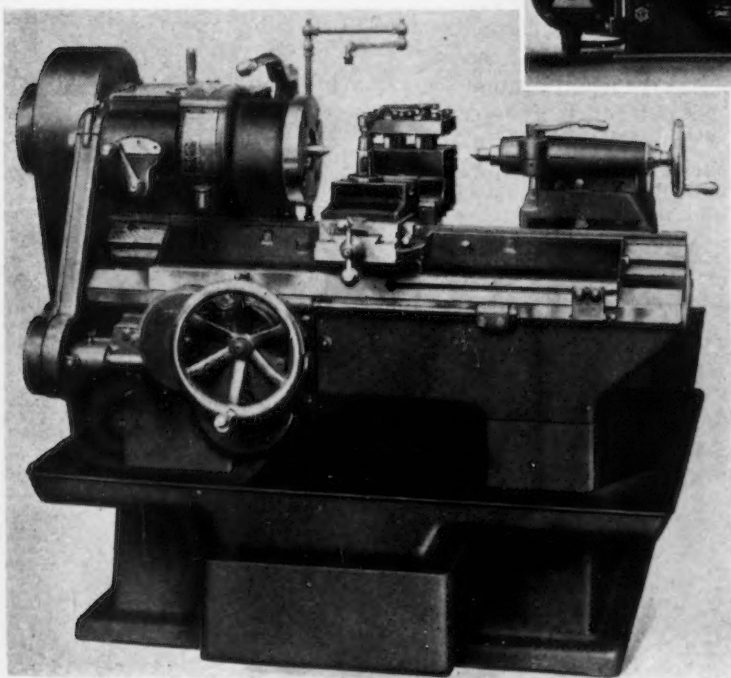
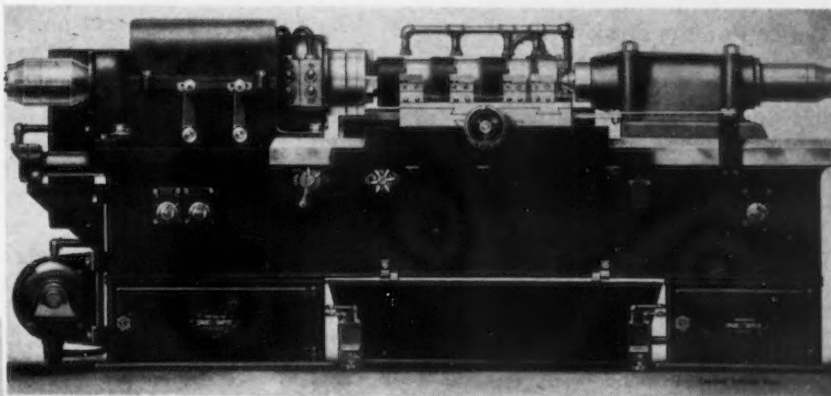
**P**RODUCED by the R. K. LeBlond Machine Tool Co., Cincinnati, two new multi-cut lathes, a 6-inch and a 9-inch, are designed for easy set-up of separate tools for turning, facing, necking and grooving cuts. All go through their cycles and finish at the same time. Operation is automatic from the time the work is put into the lathe, the lead tool brought up to the work and the power and feed levers thrown into action. The variation in feed for the turning and facing slides is obtained by change gears applied to the feed bracket and worm box. Feeds read in thousands per revolution of spindle. Relationship between slides is adjusted by setting the movable profile swivel plate. As the facing or forming tools approach the end of the cut, the feed is retarded and stops as the roller slides on the land of the profile guide plates.

### Shell Turning Lathe

**S**HELL machining lathe has been developed by the Sparks-Simplex Machinery Corp., 30 Rockefeller Plaza, New York. This machine is designed with a hydraulic power system for a range of machining operations on shells from 75 mm. to 155 mm. A single lever controls automatically the combination of tool movements for a given operation, the coordination of the movements being effected through separate hydraulic cylinders. Foot

treadles on either side of the operator leave the hands free while the shell is hydraulically locked in position between chuck and revolving tail stock spindle. The lathe is equipped with Timken heavy duty radial thrust bearings. A motor of 50 hp. is thought sufficient for the heaviest multi-tool operation with tungsten carbide tools.

Feeds are dial set within a range of 0.004 to 0.130 in. for the carriage and 0.007 to 0.210 in. for the cross slide.



### Surface Grinder

**F**OR production service the Doall Co., 1301 Washington Avenue South, Minneapolis, announces a new precision surface grinder for dry or wet precision work. The base of the machine is ribbed and reinforced and the spindle column has a 30 in. bearing surface to give maximum rigidity and minimum vibration. Table and column are made of alloy cast iron. The precision ball bearing equipped spindle is built for a standard 7½ in. diameter, ½ in. face grinding wheel and has a dynamically and statically balanced motor. All table movements are hydraulic and travel is



variable from zero to 50 f.p.m., while the cross feed is adjusted from zero to 0.120 in. at each reversal. A built-in dial indicator registers in tenths of thousands any movement of the grinding wheel relative to the work being ground. Automatic lubrication to all moving parts, coolant piping system, splash guards and a fluorescent type lamp to illuminate the table are furnished as standard equipment.

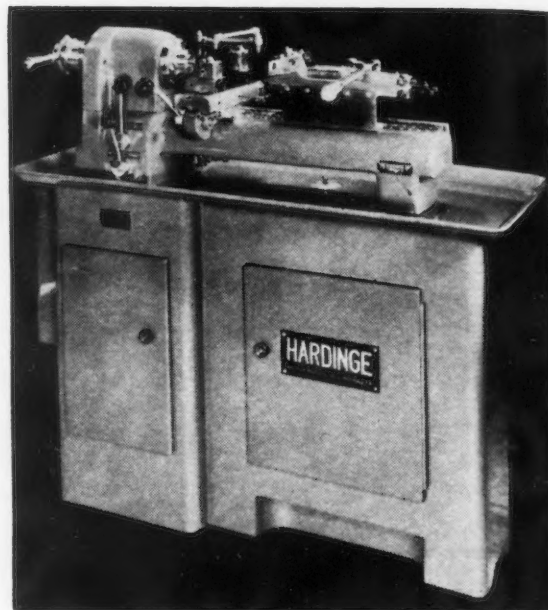
#### New Automatic Hydraulic Lathe

**E**NTIRELY redesigned automatic turret lathe was brought out by *Foster Machine Co.*, Elkart, Ind. This No. 1-F Fastermatic has a range of 27 spindle speeds from 22 to 332 r.p.m., arranged in nine sets of three automatic changes. During the speed changes the flow of power to the spindle continues uninterruptedly, resulting in a smooth uniform finish. A quick acting brake stops the spindle for reloading work. Speed changes are selected by means of the spool in front of machine and are made by means of hydraulically operated compensating multiple disk clutches, either during the cut or at the end of the stroke. The number of spindle speed changes per turret face is determined by the number and position of buttons on the spool. The bed of the tool is semi-steel casting with nitrided V-ways claimed to have a hardness of over 1000 Brinell. Hydraulic feeds are powerful, readily selected and provide a separate, independent feed for each turret station and assure longer tool life. The hexagon turret may be either indexing or non-indexing. Cross-slides are independent of each other. The headstock is powerful, and main shaft is supported in the center. This machine

tool is universal in application and so simple to set up that it may also be used for short-run lots. The swing over bed is 21 in. and distance between spindle nose and turret face 41 11/16 in.

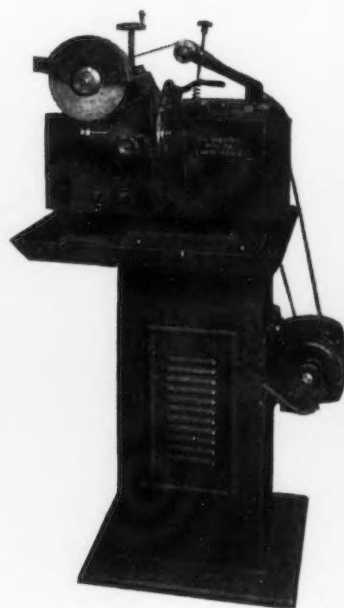
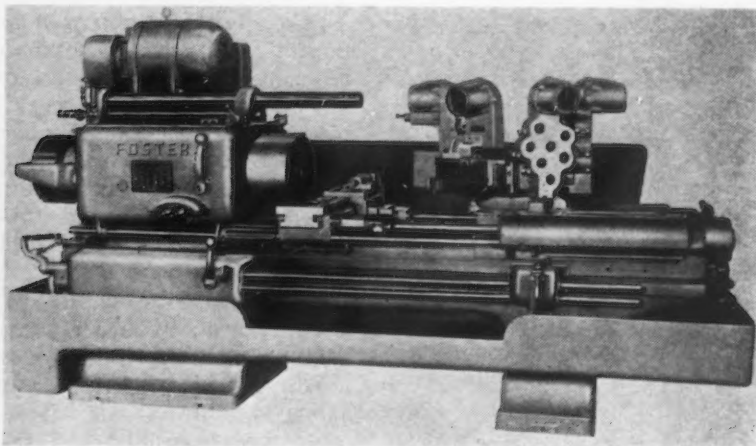
#### Second Operation Machine

**R**ECENTLY *Hardinge Brothers, Inc.*, Elmira, N. Y., introduced a high speed precision second operation machine, which is used for production and experimental work in secondary operation, finishing or sizing. The amply proportioned bed of the machine rests on three spheres to guard against distortion due to an uneven floor. The headstock has fully enclosed preloaded ball bearings in an inner chamber and carries a double V pulley drive from the motor. The automatic collet closer permits rapid opening and closing of the collet or step chucks by a lever. The rugged double tool cross slide is provided with positive stops. The tilted hexagon turret gives greater rigidity and clearance for standard turret tools. Two levers control spindle speeds: low-stop-high and forward-brake-stop-reverse through the electrical motor. There are no gears. Eight forward and eight reverse speeds range from 230 to 3900 r.p.m. A rapid action brake stops the spindle. The welded steel pedestal completely encloses the motor and houses oil coolant system as well as a cabinet for tools, etc. Machine has 1 in. collet and 6 in. step chuck capacity and 9 in. swing.



#### Circular Saw Grinder

**A** GRINDER has been brought out by the *Wardwell Mfg. Co.*, 3167 Fulton Road, Cleveland, for the automatic sharpening of milling cutters and metal cutting saws in gangs. The machine automatically indexes the gang of saws one row at a time, with the grinding wheel shaped to suit the gullet of the tooth. Saws may be from 2 to 8 in. in diameter and up to 3 3/4 in. in total thickness, with tooth spacing 1 1/4 in. from point to point. A group of 250 saws 0.015 in. thick can be sharpened together within a variation of + 0.001 of diameter of entire lot. The one-piece casting of the machine carries a grinding wheel spindle mounted on ball bearings. A horizontal slide with a stroke of up to 5 in. reciprocates





under the grinding wheel and is gibbed to take up wear. The saws are automatically fed through an index plate. The motor is rated  $\frac{3}{4}$  hp. at 1800 r.p.m.

#### Snagging Grinder

**M**ULTISPEED and single speed snagging grinders are brought out by the *Hisey-Wolf Machine Co.*, Cincinnati, for high speed or vitrified grinding wheels of 18, 20, 24 and 30 in. size. Wheel guards meet the American Foundrymen's Association standard. It is impossible for a piece of work to jam between wheel and guard, and all chips and sparks are arrested. Standard open rated motors can be used with screw adjustment on a dovetail slide base. A quick acting handwheel transfers belts from one set of sheaves to the other and 1, 2, 3, or 4 speed selections may be available. A coupling is inserted in the spindle to allow for removal or installation of new belt. Machine is ball bearing equipped throughout. For solid wheels, flanges can be supplied.

#### Lapping Machine

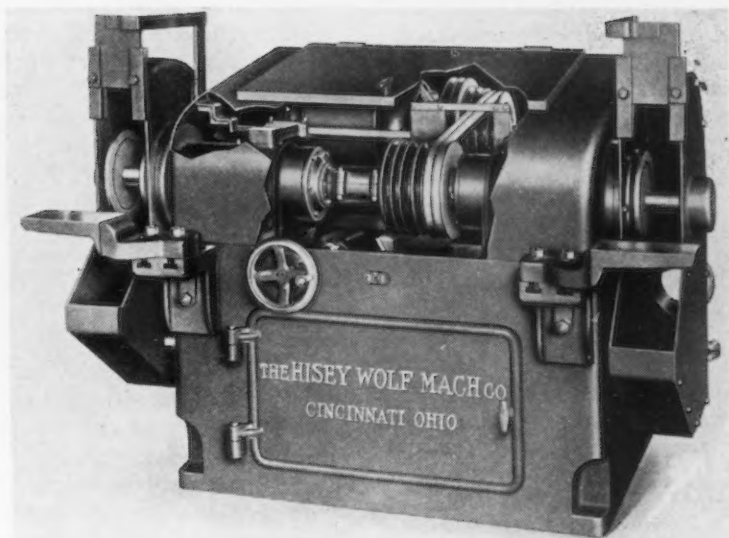
**R**ECENTLY the *Ultra-Lap Machine Co.*, 255 McDougall Avenue, Detroit, developed a lapping machine for all materials which is claimed to increase production very considerably compared with hand lapping. The manufacturers guarantee a precision



of flatness of a 12 millionth on an inch and under—and of smoothness 1 micro-inch and under. They also claim an exceptional uniformity of finished parts. Two models are produced: the larger, equipped with an 18 in. table, can handle work up to 8 in. diameter; the 9 in. table model takes material up to 3 in. A measuring instrument is provided to time lapping jobs, automatically giving a visual warning when the set period has passed.

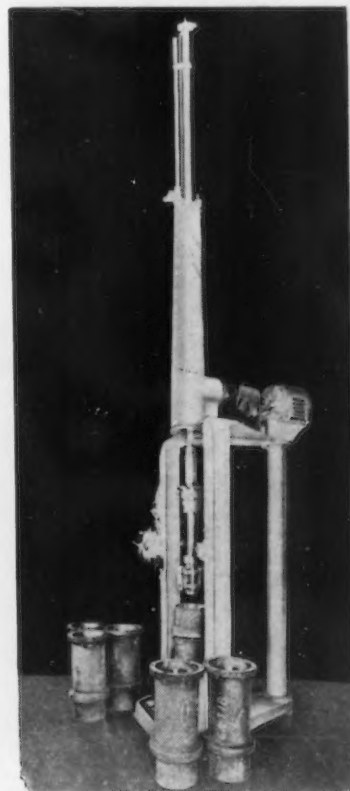
#### Drafting Tables

**T**WO new models of drafting tables are put on the market by the *Frederick Post Co.*, Box 803, Chicago, the *Metapost* and the *Primo Metapost*. Both models are readily adjustable: the top may be tilted from front to back by the adjustment of two hand clamps. It may be raised to any level from 35½ to 43 in. The latter operation is performed by hand on the *Metapost* model and by turning a hand-wheel on the *Primo Metapost*. The tables are made of chromium plated steel tubes and the top of 1½ in. soft textured pine. A reference shelf may be attached with ample space for drawings, materials, etc. Eleven table top sizes range from 31 x 42 in. to 48 x 96 in.



#### Honing and Lapping Machine

**W**ITH their unusual capacity, simplicity of operation and speed of production, large capacity honing and lapping machines developed by *W. H. Simmons & Co.*, 208 Lawrence St., Cincinnati, constitute a new departure. Obtainable in three sizes of 36, 48, 72 in. stroke and 2, 2¼ and 2¾ in. spindle diameter, they work on either d.c. or a.c. The construction incorporates alloy steel extensively and a high power input at the honing head makes possible the honing of cylinders of 10½ in. bore and 30 in. length in 15 min. removing





0.007 to 0.008 in. from the diameter. Several spindle speeds and reciprocating speeds are available. The hone can be stopped, short stroked or withdrawn without disturbing the setting.

#### Hobbing Machine

**T**HE type T hobbing machine built by *Barber-Colman Co.*, Rockford, Ill., is now available with several new attachments and many improvements. Although this machine was originally designed primarily for hobbing taper splines on shafts, the improvements make it adaptable for hobbing spur or spiral gears, straight splines, worms, worm wheels, and miscellaneous special hobbled forms. This machine resembles the regular Barber-Colman type A hobbing machine, the main point of difference being in the hob swivel construction. It provides a means to traverse the hob longitudinally and laterally at the same time. The result is that the hob can be fed in an oblique angle to the work for taper splines. In hobbing other types of work, such as spur gears, this same oblique hobbing method can be used, or these parts can be hobbled in the conventional manner.

Another change has been to move the hob spindle shoulder back in order to accommodate standard hobs up to 4 in. diameter by 4 in. length, which also permits a greater number of hob settings to be made compared with the ordinary hobbing machine. There is an additional feed screw in the lower hob swivel slide to give the hob its longitudinal traverse. A special micrometer dial is provided on the

work slide which permits operators to read the height of the center line of the work spindle above that of the hob spindle. A similar dial on the main feed screw covering the whole length of longitudinal adjustment shows the distance between the spindle nose and the center line of the hob carriage unit. A single large gear box on the left hand side of the machine contains all change gear trains, along with all the other controls.

Other improvements include: A newly-designed overarm of large cross section; covers for the middle of the work spindle, the back of the upright housing and the change gears; chromium plated telescoping way guards for bed and hob slide; and an additional safety switch has been provided to prevent any over run of the hob slide.

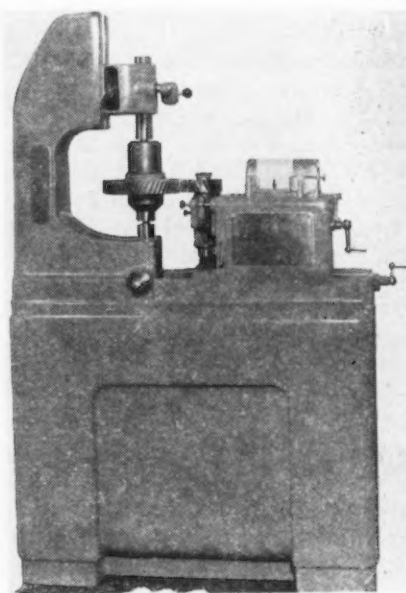
#### 12 Spindle Superfinisher

**A** 12-spindle continuous superfinisher was recently developed by *Foster Machine Co.*, Elkhart, Ind., especially for valve tappet bodies. Twelve spindles are arranged over a table, which is in continuous rotation. Each spindle is equipped with a superfinishing head and has a centerless drive wherein the body of the tappet is rotated by a pair of rolls. As the spindle approaches the charging station after completion of the cycle, the head automatically rises and the work spindle comes to a stop. After replacement of tappet the superfinishing head descends as the spindle begins to turn. The superfinishing head performs two motions, 450 oscillations of 3/16 in. per minute and an adjustable

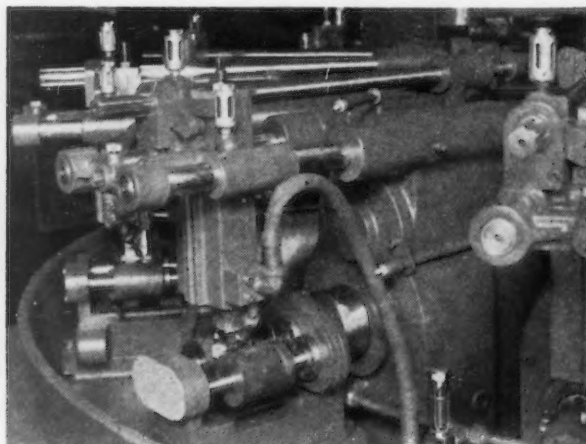
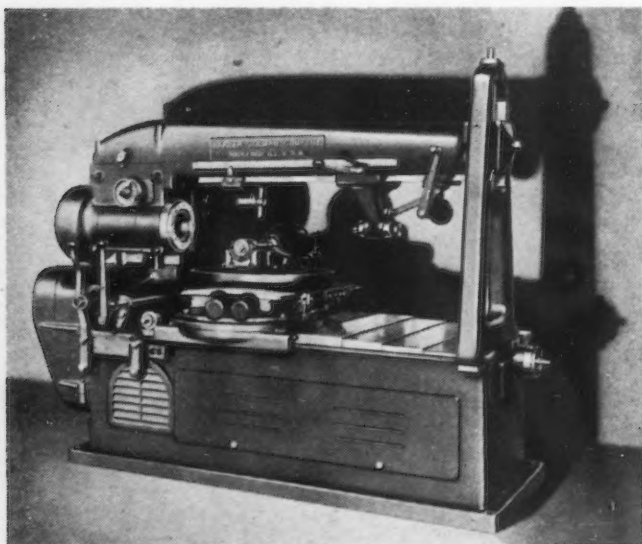
motion up to 5 in. at the rate of 0.060 to 0.080 in. per revolution of spindle. Spindle speed and table speed are easily adjusted. The production of tappet bodies amounts to 900 per hour. Automatic collets can also be used for holding work.

#### Gear Checking Machine

**T**HE *Fellows Gear Shaper Co.* of Springfield, Vt., has recently placed on the market a new machine for checking gears, known as the No. 20M Red Liner. It will handle spur or helical gears up to 18 in. pitch diameter. It operates



on the same fundamental principle as the regular Red Liner but is arranged to handle gears on centers which are adjustable. The lower center is adjustable to present the gear in the correct relationship to the master gear, and the upper center for handling gears or arbors of different lengths. This machine can also be arranged for





checking internal gears by the use of a suitable holding fixture. The machine is equipped with a 1/20 hp. motor capable of operating on either a.c. or d.c. The machine can also be operated by hand. The charting mechanism is similar to that employed on the regular Red Liner. This machine is particularly applicable to airplane engine gears and other classes of work demanding a high degree of accuracy in inspection.

#### Gun Rifling Machine

**S**IMPLICITY of mechanical features is claimed for the new LeBlond No. 2 gun rifling machine. It is built by the *R. K. LeBlond Machine Tool Co.* of Cincinnati, for rifling guns up to 3 in. bore and 88 in. length. Indexing the gun or bar is simplified: grooves may be either cut or broached. Automatic adjustable stops control the movement of the carriage, which stops at the end of each stroke. It is possible to get any travel up to the maximum of 10 ft. The control rod runs the full length of the bed and operates a four-way valve to start, stop and reverse the direction of travel on the carriage. In the head end leg are two adjustable hydraulic speed control valves, the one to change the speed of the carriage on the forward, the other on the return stroke. A 5-hp. constant speed motor is connected to a constant delivery, vane type rotary pump which energizes the main hydraulic cylinder and exerts a maximum pressure of 600 lb. per sq. in.



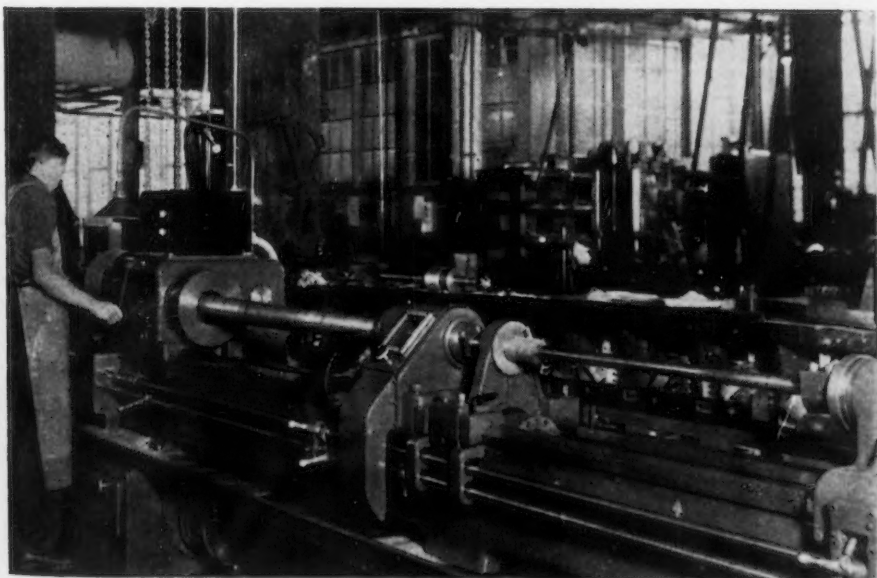
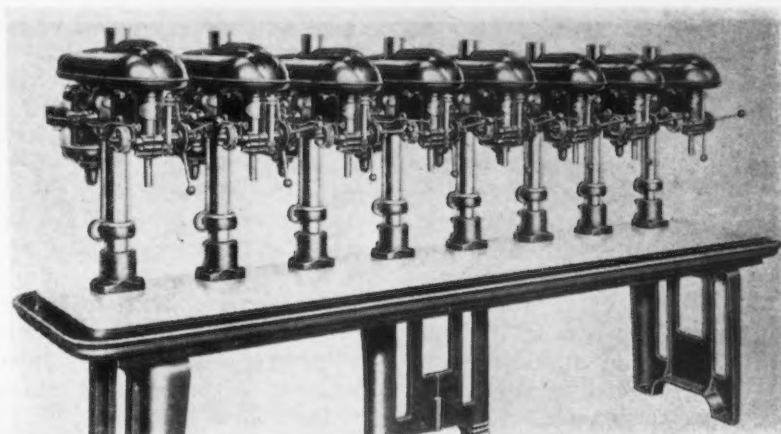
#### Bench Milling Machine

**D**ESIGNED for improved efficiency, range of application and economy on small piece milling, the new bench milling machine by *Atlas Press Co.*, Kalamazoo, Mich., handles the full range of milling operations from heavy slabbing and facing to light end milling, keyways, finishing and layout work. Three types of table control are

available: standard screw feed, rapid production lever feed, and the new Changeomatic for instant selection of automatic table feeds. A wide range of spindle feeds provides correct surface speeds for all types of work and cutters. Swivel vise, rotary index table, indexing centers and coolant system are available. Specifications: Table working surface, 4½ x 18 in.; longitudinal table travel, 12 in. (10 in. with Changeomatic); vertical table travel, 6 in.; arbor diameter 7/8 in.; overall dimensions, 25½ x 32½ x 22 in. high; motor 1/3 hp. at 1740 r.p.m. The spindle is equipped with Timken tapered roller bearings.

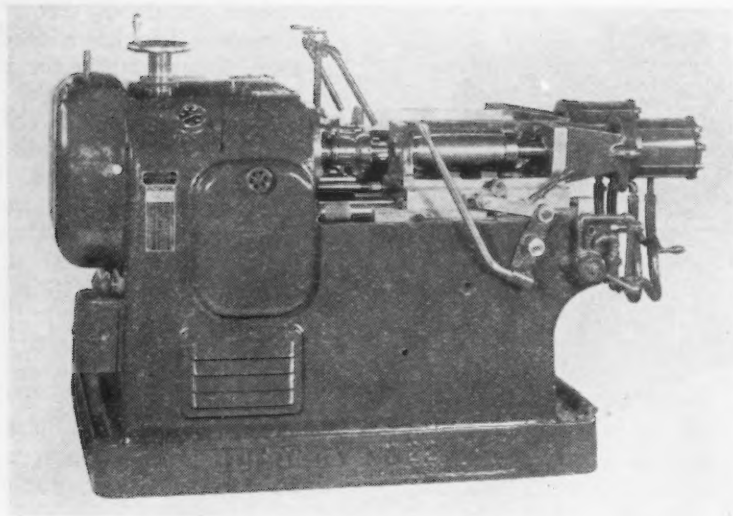
#### Drill Press

**S**ECTIONAL drill press which is adaptable to the needs of any user is produced by *Delta Mfg. Co.*, 600-634 E. Vienna Avenue, Milwaukee. It is possible with these new sectional production tables to build up presses with from one to any number of drill heads spaced to suit user's requirements above



a minimum distance of 15 in. from center to center of the spindles. Either 14 or 17 in. heads are available. Each table section measures 22½ by 30 in. and with ends the width comes to 35 in. offering sufficient space to two spindles. The tables are accurately ground and fitted, heavy and rugged. Each drilling unit can be made up to fit the job. All drilling and tapping heads are placed in a row on one continuous production table, eliminating transferring from one drill press to another and reducing handling. Maximum table working surface is available for large pieces. Any need of manufacturers as regards length of drilling bench can be satisfied.





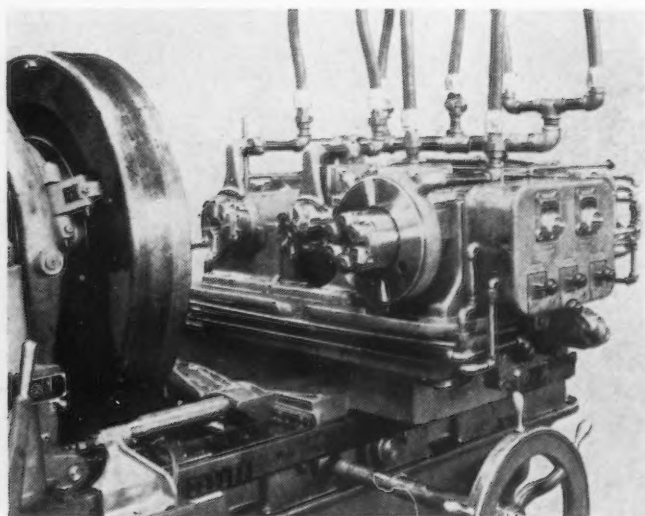
#### Shell Tapping and Chamfering Machine

**M**URCHEY Machine & Tool Co., Detroit, announces a new series of single and double spindle machines designed to tap and chamfer the nose end of shells, speeding up production and assuring accuracy by carrying out both operations in one machine. Special shell holding fixtures are designed to include locating pads for various sizes of shells to effect concentricity within a few thousandths. After approximate location, the shell is picked up by a female center actuated by an air cylinder, forcing the shell forward until the nose end is firmly held in a serrated bushing. Bushings, female center and length of stroke are designed to accommodate shells of various lengths. Collapsible taps are provided with four reaming tools and four chasers. These are actuated by yokes operating between adjusting stops which will trip the taps to predetermined thread lengths and reset

them for the next operation. The operational sequence is to chamfer the shells with the tap chasers collapsed. The carriages are then returned automatically, expanding the chasers for the tapping operation, with the lead screw then thrown in.

#### Recessing, Boring and Tapping Machine

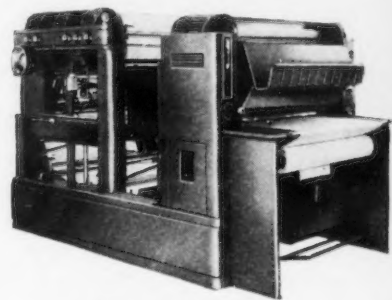
**I**NTERNAL or tapped end of integral joint type casing can be completely machined with the new recessing, boring and tapping machine of the Landis Machine Co., Waynesboro, Pa. With this machine the conventional carriage design is replaced by a special carriage on which are mounted the recessing, boring and tapping tools and a control panel. In effecting this arrangement three hydraulically controlled tool slides are mounted on a cross slide which can be indexed to bring any one of the tool slides into working position, when it will be locked hydraulically.



One tool slide finishes the recess and chamfers three surfaces in the end of the casing. The second tool slide finishes the taper bore preparatory to tapping, a collapsible tool being used to permit withdrawal after operation. Third tool slide is a Landis receding chaser collapsible tap, using leadscrew mechanism which is built into the machine. The part to be machined is held pneumatically in the spindle chuck. Advance to and retraction from work are rapid and as tools enter cut, a predetermined feed comes into play.

#### Blueprinting Machine

**U**SERS who want the special features of the model 22 printer of the C. F. Pease Co., of West Irving Park Road, Chicago, but do not require its high speed, may now obtain a new model 22-16 in which the speed is reduced to 15 ft. per min. to correspond to the speed of the model 16 washer and dryer with which it is com-




bined. Model 22 features retained are sliding contact which smooths out inequalities present in tracings; three-speed lamp control, the lamp varying according to the tracing being reproduced, and actinic arc lamps which furnish uniform light emission. Model 16 washer and dryer has a horizontal water wash, quick change chemical applicator and five aluminum drying drums heated by gas or electricity.

#### Plant Communication System

**E**LECTRIC paper take-up which replaces the manual winder previously used and automatic clearing of the complete writing field by a touch of a starter switch, are features of the new TelAutograph telescriber developed by TelAutograph Corp., 16 West 61st Street, New York. This instrument is capable of transmitting writing, sketches or figures in facsimile to a number of stations simultaneously or to any one or more stations selectively.





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**D**ETROIT—Current development includes the introduction of new 1941 models, inquiries for parts for 1942 models, hints of higher prices for automobiles, cancellation of the National Automobile Show and genuine concern over possible restriction of production of cars next fall or, more certainly, in 1942.

The Buick announcement of Jan. 23, on which details will become available to the public when the car is displayed tomorrow (Jan. 31), and the Pontiac introduction of a new car body style during the current week are both healthy signs for the industry. At the same time there is reason to believe that these developments, especially the expansion into a lower price class, would not have occurred except that diverse forces acting on the industry today precipitated the move in the direction of an expanded line of cars at lower advertised prices. Of the two, the Buick announcement is by far the more important because it indicates a trend within the industry.

The new models announced by Buick will have the general specifications of the current Series 40 special models and have been officially labeled the Series 40A. Containing the same power plant as the Buick 40, but, with new bodies, shorter wheelbase and lower price, they will expand the Buick coverage in the automotive field into a price range as low as \$915, a bare \$100 above the Pontiac minimum prices. It must be remembered that Oldsmobile prices are scattered along the line between Pontiac and Buick. Delivered prices at the factory represent reductions of from \$20 to \$31 from corresponding models of the Series 40 line, and the convertible coupe is \$129 under the price of the convertible in the Series 50 line, the next large convertible offered by Buick.

#### New Model Priced for Future

The trend of management thinking behind the Buick development is indicated by one of the remarks of Harlow H. Curtice, president of Buick, who said at the press and dealer preview:

"The new models permit prices more closely in line with future market objectives than heretofore has been possible. This has been achieved despite increases in commodity and material prices, along with substantial rises in other manufacturing costs."

It is obvious that as models just introduced are priced with adjustments already made for increased costs, they are in a much more favorable position to withstand possible future cost increases than are the cars priced last fall. In other words, if cost pressure

## On The Assembly Line

BY W. F. SHERMAN

*Detroit Editor*

• Buick's announcement of new, small car followed by introduction of new style car body by Pontiac... Some companies now inquiring for parts for 1942 models... Cancellation of Auto Show emphasizes concern over possible restriction with motor car production.

forces a general price increase in the industry, the cars introduced now have a chance to withstand pressure and then will be in a position to seek even greater public acceptance because of lower relative prices.

Of interest, because they indicate a counter-trend to that which is constantly increasing the size of automobiles, are some of the specifications. These cars have a 118-in. wheelbase, compared with 121-in. wheelbase in the previous small Buick. There is a 6-in. reduction of overall length, accomplished through reduction in the amount of overhang. The cars are about 150 lb. lighter than the former lightest Buick. The engine is the Fireball eight and is the same as the ones used in the Series 40 and Series 50, so the power-weight ratio in

the new models indicates slightly improved performance and economy.

The four body styles will be a six-passenger, four-door sedan, six-passenger sport coupe, three-passenger business coupe and six-passenger convertible coupe with automatic top. The styling is of the torpedo type and actually the bodies are based on the Chevrolet version of this styling which was introduced last fall. Basically, the bodies are the same as the Chevrolet super de luxe line, except for the four-door sedan, which is actually a new body structure.

#### A Departure for General Motors

This same body is being added to the Pontiac line as the Metropolitan torpedo sedan and will shortly be announced as an addition to the Chevrolet line. In the Pontiac line it is mounted on the 119-in. wheelbase chassis and will be available with either six- or eight-cylinder engine. There is exactly \$100 difference in the advertised delivered price of the Pontiac and Buick—the Pontiac being \$921 and the Buick \$1,021 in this body style. When the eight-cylinder engine is used in the Pontiac the cost is \$25 higher.

These developments, incidentally, mark a departure from the General Motors Corp.'s setup, which has maintained a line of demarcation between the B-O-P (Buick, Olds, Pontiac) series of inter-related models and the C-O-P (Chevrolet, Olds, Pontiac) series. In effect, it will create a B-P-P-C series and will further expand the practice of utilizing Fisher dies for a wide series of bodies.

These announcements come as the first concrete expression of an apparent determination by the industry to offer attractive models (with an eye to price) to offset defense-required restrictions which may come within the next year. For instance, Ford



# Unusual Set-up for "ACORN" DIES

This "Acorn" Die is finish-threading a special aeronautical valve of stainless steel. Accurate? Well, the  $\frac{1}{2}$ "-20 thread must be so accurate that the threads of the High Speed "Acorn" Die have to be lapped so as to produce smooth, perfect threads within extremely close tolerances. A full thread right to the shoulder was needed, too—another reason for the "Acorn" Die. & Not one manufacturer in a thousand will have an operation like this one. But the fact that only "Acorn" Dies could meet it is genuine proof of their extreme adaptability. & If you need fast threading, accurate threading or super-accurate threading, you need to know more about "Acorn" Dies. Any "G. T. D. Greenfield" Engineer is qualified to answer your most searching questions.

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Canada, Ltd., Galt, Ont.



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is already in production on the six and may any day make an announcement of the availability of this engine. Chrysler has a new engine for use in the Chrysler line which appears likely to put Chrysler lines in a position more competitive with the Chrysler-built De Soto line. In addition, there probably will appear this spring several ultra-modernistic, semi-custom built cars which will be interesting as style forecasters and as market stimulators, but otherwise will have no very important meaning this year. There are even rumors again of a light Packard.

Actual appearance of new models undoubtedly will be limited to those for which little or no new tooling is required. The Buick incorporates units which already are in large scale production, so does the Pontiac body. While the Ford six meant new tooling, this manufacturing equipment has been avail-

able for some time, and Ford just hadn't used it. Because of Packard's preoccupation with defense work, the light Packard is regarded as a remote possibility at best.

The question of 1942 models appears to have been settled at last and definitely. An authority states that Chevrolet's tooling for 1942 is complete now. All of the tooling that was required, and it undoubtedly was limited by circumstances, and also the die work, has apparently been completed inside the Chevrolet and Fisher Body tool and die shops. Dodge is another which appears to have settled its program, since inquiries are now out for parts for 1942 models. Vendors have been assured that the inquiries are genuine—that, as soon as possible, orders will be placed for all of the estimated requirements up to Jan. 1, 1941. This positive gesture speaks for itself.

As to car prices, there appear

already to have been some upward adjustments, especially among the independents. No announcements have been made and possibly none will, but adjustments are being made, nevertheless.

Suppliers are encountering a new type of specifications when they bid on aeronautical work. Specifications have not been explained very fully except in limited circles, but there is nothing mysterious about them. These specifications, known as the SAE standard aeronautical material specifications, or more popularly as the AMS standards, were drawn up as the result of work initiated by the engine technical committee of the Aeronautical Chamber of Commerce of America through its materials committee. Preparation of the standards was undertaken by the Society of Automotive Engineers' standards committee, in October, 1939. The work of this committee is still going on.

Already prepared and issued are 136 different sets of specifications and there are another 150 still to come. Those prepared so far are largely for ferrous and non-ferrous materials and a few non-metallic products, but eventually they will include fabrics, surface protection, plastics and other materials used in aircraft, aircraft engines and major accessory equipment. They will also cover methods, processes and tests where such standards may be feasible.

The most unusual feature of these standards, or specifications, is that they are complete enough for use in the purchase and acceptance of materials. They differ therein from existing, more general engineering standards such as SAE steel series. They are particularly applicable in cases where material is procured from warehouse stock. They cover much more than the mere physical characteristics of the materials. For instance, in a typical case, the specification covers chemical composition, hardness and quality of a cast part, also finish.

#### Auto Output 121,948

Auto production in the past week stayed above the 120,000 level. Assemblies totaled 121,948, compared with 124,025 in the previous week and 106,400 a year ago, according to Ward's Reports, Inc.

° ° °  
**SOMEWHERE IN GERMANY:** Here is an example of how German plane builders eliminated one bottleneck. Held by the mechanic is a plane control column, now made in a separate factory. It is completely finished, even to the solenoid gun control, the trigger of which can be seen between the hand grips. When the column is installed, the end resting on the table is set directly to the elevator controls to the ship's tail. The sprockets are attached to controls already in place on the ailerons. (In some countries these controls are built up within the plane after the column has been installed thus slowing production.)

Photo, by International

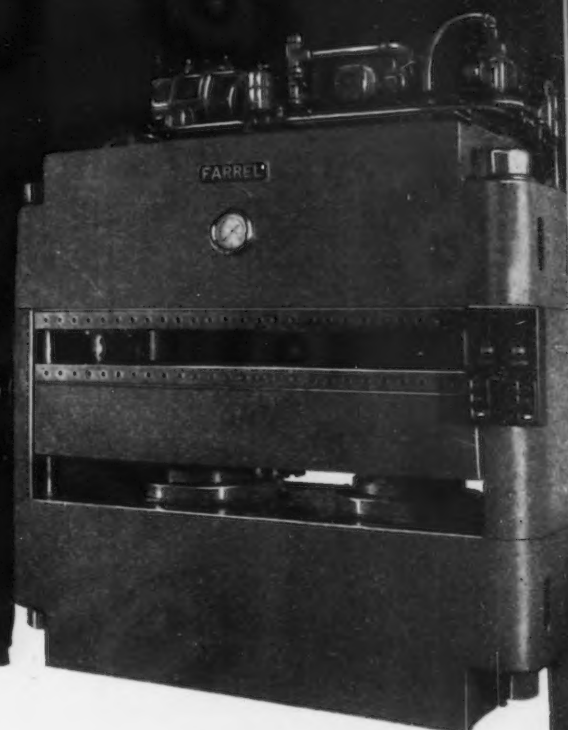
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Fitchburg Engineering Corp. special Duplex Milling Machine. One of several types using 100% Oilgear pump, cylinder and valve integral with remote control features.

Right: Farrel Birmingham 226-ton 80 x 48" single opening felt press, using Oilgear Fluid Power pumps, cylinders and valves.



## There is no time for "Time Out" these days

Today, as never before, it is essential that production machines go right into production and *stay* in production. Busy factories have no time for "Time Out." Machine tool and machinery manufacturers themselves can't afford service complaints.

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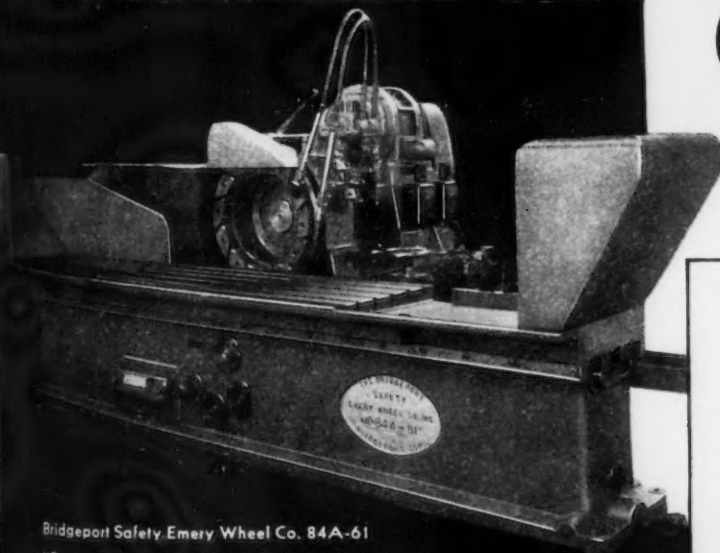
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Bridgeport Safety Emery Wheel Co. 84A-61 "Face Grinder." 100% Oilgear Fluid Power drives table through gear and rack.



**W**ASHINGTON — At a press conference on Wednesday of last week, William S. Knudsen, director general of the Office of Production Management, reflected optimism over progress of the defense program and in commenting on the steel supply situation said that there has been no shortage. The report on steel capacity by Gano Dunn, president of the J. G. White Engineering Co., Mr. Knudsen said, will be ready soon. If the study shows a need for further expansion, the steel industry will expand, it was declared.

Mr. Knudsen pointed out that there are two schools of thought regarding the need or the lack of need for steel expansion and added that the question will not be decided until the Dunn report is made. He referred to electric steel capacity already added and under construction and to the open hearth expansion being built and planned. Roughly the steel expansion program will add some 2,300,000 ingot tons.

Extra armor making capacity "will get us by" when it gets into production, Mr. Knudsen said. Discussing heavy steel castings and forgings, Mr. Knudsen said the commission has called in a Bethlehem Steel Co. representative. He was referring to George Hocker, Bethlehem, Pa., manager of sales of forgings and castings, who is acting as consultant to Production Director John D. Biggers.

#### Tools "Over The Hill" By May

The largest job in the way of machine tool supplies, it was stated, will be "over the hill" by April or May. Part of the tooling-up is now completed.

The new Chrysler plant, now under construction, is scheduled to produce 10 tanks daily. After temporary delays occasioned by some changes in specifications, light tank production has been resumed. In December 38 tanks were manufactured. Mr. Knudsen said supplies are moving smoothly and that he saw no present need for transportation priorities.

Discussing the situation with respect to other materials, Mr. Knudsen said:

**Aluminum**—President Davis of Aluminum Co. of America recently was in conference with Mr. Knudsen and decided on a course of procedure. Shortage of forging and bar capacity which is "being taken care of" by Mr. Biggers.

**Magnesium**—The trouble is not so much the matter of supply of metal as it is a matter of foundry capacity. Foundry capacity is no cause for much worry since the operation is mostly one of sand casting, so the principal need is to train more men. Airplane engine

production not expected to be delayed by magnesium shortage.

**Zinc**—Fear of shortage resulted in request that automobile manufacturers be sparing in the use of ornamental "hickeys," but there is no present trouble or existing need for new smelting capacity.

Mr. Knudsen predicted that the goal of 33,000 airplanes by June 1942 will be achieved. He said that airplane parts already are in production in two automobile plants and that the schedule for large bombers to be assembled from parts made in automobile plants "would begin to show something by the last part of the year." Of the four new assembly plants, the one at Kansas City is expected to be the first to operate, followed in order by the plants at Omaha, Neb., Fort Worth, Tex., and Tulsa, Okla.

It was admitted by Mr. Knudsen that "we were slow getting under way" but he said it is the expectation to catch up with the original schedule. Of the 799 military planes produced last December 60 per cent or 480 were of the combat and 40 per cent were of the training type. During the same month 2400 airplane engines of all types were manufactured.

Painting an overall picture of the defense program, Mr. Knudsen said that the chief bottleneck is time.

"The more time, the less bottleneck," was his terse comment.

This thought was expressed earlier in the day by Mr. Knudsen when he told the Council of State Governors that "in another three months we should have something real to show in the matter of quantities."

Mr. Knudsen added:

"If we have confidence in each other and are willing to have a little sweat for a year or so, we might save a little blood later on."



Excluding tin plate and terne plate, wire and wire products, a Bureau of Census report on rolling mill products shows that the value of wrought pipe and tubing produced in 1939 was \$321,816,406 compared with \$401,012,879 in 1937. The output of wrought welded pipe, except stainless, made in the rolling mill industry was 1,280,108 gross tons, valued at \$93,790,096 in 1939 against 1,210,658 tons, valued at \$93,646,073 in the earlier year.

The wrought welded pipe production in other industries was 615,278 tons, valued at \$67,976,877 and 1,095,617 tons valued at \$109,191,593, respectively. Oil country goods production totaled 168,833 tons, valued at \$15,269,410 in 1939. This item was not reported



**• Steel industry will expand if Gano Dunn report finds it necessary, Knudsen says . . . Defense head predicts goal of 33,000 planes by June 1942 will be reached . . . Tells governors sweating for year will save blood later.**



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Keep one step ahead of today's increased production demands with the correct cutting fluid—use SUNOCO.

Follow the leaders of the machine tool industry who choose, use and recommend SUNOCO Emulsifying Cutting Oil on their machines. One of these is Jones & Lamson Machine Co. They know from experience SUNOCO aids machine tools to produce more accurate, fine-finish work at rated capacity.

In your shop . . . with your material . . . under your own working conditions . . . test Sunoco. Call in a SUN Cutting Oil Engineer — let him show you how to step ahead to full rated capacity.

**SUN OIL COMPANY, Philadelphia, Pa.**

#### PERFORMANCE DATA

Operation: Turning 8½" Collet Chuck Body  
Machine: Jones & Lamson 7-B Saddle Type Turret Lathe  
Material: X - 1315  
Spindle Speed: 40 R.P.M.  
Cutting Speed: 88 S.F.P.M.  
Feed: .022"  
Depth of Cut: 1⅝"  
Cutting Lubricant: 1 part Sunoco to 20 water

*Courtesy of Jones & Lamson Machine Co.*



**PETROLEUM PRODUCTS FOR ALL INDUSTRIES**



separately in 1937 but was included with line pipe. The output of the latter grade of pipe in 1939 was 178,938 tons, valued at \$13,354,325, while in 1937 the combined oil country and line pipe production totaled 445,924 tons, valued at \$36,960,504.

**Other black pipe** output in 1939 totaled 963,716 tons, valued at \$69,188,913 compared with 1,186,627 tons, valued at \$90,587,261 in 1937. Respective figures for galvanized pipe were 472,149 tons, valued at \$42,033,869 and 524,160 tons, valued at \$48,885,267.

**Stainless steel pipe and tube** production in 1939 totaled 3,115 tons, valued at \$3,704,776. There were no data on this item in 1937. Seamless tube output in 1939 was valued at \$151,569,631 compared with \$192,643,910 in 1937.

**Production of cold rolled strip steel**, except cold rolled from drawn wire, totaled 675,225 tons, valued at \$72,258,006 in 1939 compared with 760,729 tons, valued at \$78,977,381 in 1937. The output of cold-finished steel bars in 1939 was valued at \$62,534,810, com-

pared with \$76,584,847 in 1937. The output from the rolling mill industry totaled 171,703 tons, valued at \$19,578,315, and 234,512 tons, valued at \$25,525,198, respectively. Comparative figures for production in other plants were 447,948 tons, valued at \$42,956,495 and 560,651 tons, valued at \$51,059,649.

**Railroad spike production** in 1939 totaled 1,402,196 kegs, valued at \$8,475,558 compared with 1,214,247 kegs, valued at \$7,024,811 in 1937. Respective figures by value on the production of bolts, nuts, units, washers, etc., were \$99,844,878 and \$124,945,864. Production of galvanized plates, sheets and strips was valued at \$111,832,936 in 1939 compared with \$112,543,122 in 1937. The output of plain material of these products totaled 938,952 tons, valued at \$70,880,421 in 1939 compared with 898,492 tons, valued at \$73,970,211 in 1937. Production of corrugated or crumpled sheets in 1939 totaled 507,009 tons, valued at \$40,952,515 compared with 454,386 tons, valued at \$38,572,911 in 1937.

## Reynolds Metals, Unions Sign Defense Pledge

Washington

••• A pledge jointly signed by R. S. Reynolds, president of the Reynolds Metals Co., and 17 CIO and AFL officers, devoting combined man power and plant energies to the supply of vital war materials, was announced last week by Mr. Reynolds as a preface to a statement that the present expectation is that by mid-summer the company will be producing more aluminum alloy sheet, rod, tubing, and extruded shapes than were being produced in the entire country prior to the present European war.

The Reynolds company and its five wholly-owned subsidiaries, all closed shops, employ 7000 workers.

"The company's increase in manufacturing capacity," said Mr. Reynolds, "will be possible through a current and projected building program approximating \$35,000,000. Eighteen factories in seven cities were mortgaged by the Reynolds company last year to secure fully a \$15,800,000 Reconstruction Finance Corp. loan which with available cash resources provided the initial expansion funds and permitted building operations much earlier than other plant construction was started throughout the nation."

## 3 Firms Get Orders For 4500 Army Trucks

Washington

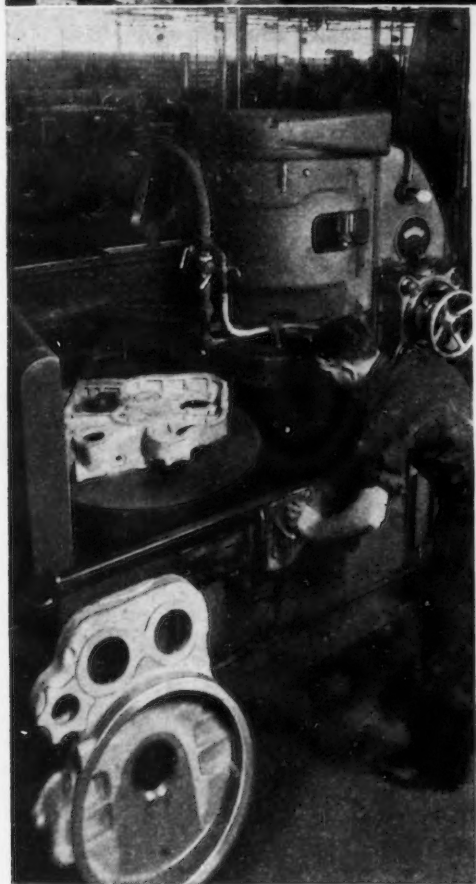
••• Announcement has been made by the War Department that the 4500 ¼-ton trucks, contracts for which have been awarded to the American Bantam Car Co., the Ford Motor Co., and the Willys-Overland Motors, Inc., will be distributed to all types of regular army units in the United States for complete field service tests and report on performance. Delivery of the trucks to the Army is expected to begin about the middle of February with final delivery early in May, 1941.

## THE BULL OF THE WOODS

BY J. R. WILLIAMS







These No. 18 Blanchard Surface Grinders are earning profits on a wide variety of Diesel Engine parts.

## Through **THICK** and **THIN**

... THE BLANCHARD NO. 18 IS A CONSISTENT PROFIT MAKER ON FLAT SURFACE WORK.

**L**ARGE work of thin section is usually difficult to grind under the best of conditions. Here the Blanchard method of surface grinding shows to full advantage — the work is held on the magnetic chuck and the wheel takes broad cuts over the surface at each pass. This results in greater accuracy, finer finish, and better production — the Blanchard grinds metal at all times — not air.

Above, a No. 18 Blanchard is grinding 18 x 24" steel engine end plates of thin section. .020" of stock is ground off each side to limits of  $\pm .002$ " at a production of 7 plates (14 surfaces) per hour. Note also the variety of other parts which are ground on this machine.

In this same plant, another No. 18 Blanchard is used for grinding large, heavy cast iron flywheel housings (see photo at left). 1/8" to 3/16" of stock is ground off one side of the casting to limits of  $\pm .002$ ". Production is 5 housings per hour.

The No. 18 Blanchard can save you money in every department. Let us figure exactly how much these savings will be on your work.



**THE BLANCHARD MACHINE COMPANY**  
64 STATE STREET, CAMBRIDGE, MASSACHUSETTS, U. S. A.



# Fatigue Cracks

BY A.H.DIX

## Wisecracks and Income Taxes

••• Our favorite press agent is Pontiac's. He is incredibly prolific and dispenses novel ideas as freely as a supply sergeant hands out new socks the morning after a ten-mile hike with full packs. Everything and everybody in the Pontiac plant is grist for his mill. We learn, for example, that Al Zinser, wheel hoister, has just hoisted his 5½ millionth wheel, that he has lifted 50,875 tons of wheels in seven years, that his friends call him "Popeye" because of his bulging muscles and other reasons (see cut), and that he can turn a neat phrase. Sample: "When I first came on this job I couldn't lift my voice. Now, etc., etc."



The latest release informs us that the Pontiac motor division has set up a bureau to help employees fill out their income tax statements. To prove it we present a photograph showing Donald Carnegie, assembly worker, being initiated into the joys of paying off the national budget. Donald looks none too happy about it, and to show his distaste for the whole thing he is holding his book upside down. The release says that the young lady is Miss Virginia Hubbard, but if you will look sharp, you will see she wears a wedding ring.



## Midnight Candle Burner

••• If we had any initiative we would do some press agenting for the people who make your favorite family journal. We would tell you, for instance, that last week's leading article, a flash of sunlight on the befogged steel capacity situation, was written by candle light.

Tom Lippert, who wrote it, was banging it out on his typewriter at his home in Plainfield, N. J., two weeks ago Thursday night when a sleet storm put too much weight on electric wires. His lights went out at 9:30, and as he had to have the article ready by the next morning, he Abraham Lincoln'd until 2:16 a. m.

## Two Too Much for Us

••• An article bearing the Lippert imprimatur is always good for a couple of additions to our vocabulary. The two strangers to us in last week's lesson were *arcane* and *hyperopic*. Our drugstore dictionary tells us that the first one means mysterious, but the second is too heavy for it. Some night after dark we will sneak into the brains department's domain and look it up in the big book that gives the editors all their *verba sesquipedalia*.

## Something for Nothing

••• The editorial index for the second half of 1940 is now on the fire and will be out soon. If you want one, just say the word. No charge.

Maybe sometime we will get around to issuing a semi-annual index of the ideas in the ads. One is needed. The other day someone wrote in that he vaguely recalled a certain machining operation that he saw in an ad here a couple of years ago, and please send clipping. With about 10,000 ads a year to go through, we are still looking.

Last week we had a request for a clipping of an article on bolt manufacture that appeared 10 years ago. The longevity of the material in your favorite family journal is frightful.

That reminds us to ring in this answer a high school girl gave to an order to define a bolt and nut:

"A bolt is a thing like a stick of hard metal such as iron with a square bunch on one end and a lot of scratching around the other end. A nut is similar to the bolt only just the opposite, being a hole in a little chunk of iron sawed off short, with wrinkles around the inside of the hole."

## Current Mishap

The same sleet storm raised hell with the commuting lines of the D. L. & W., which are electrified, with feed wires overhead. The delicately balanced pantographs became ice-laden, preventing contact with the wires, and causing Henry Leonard, our assistant general manager, to wisecrack that the Lackawanna was caught with its pantographs down.

## Iron in Their Diet

••• Ever since December, 1937, we have been treasuring a clipping from the American Iron and Steel Institute's publication, "Steel Facts," about a worm that ate steel rails. It seems that back in 1887 a series of railroad accidents occurred near Hagen, Germany. An investigating commission appointed by the government blamed the wrecks on a thin gray worm, no thicker than the tine of a fork, claiming that it devoured 36 kilograms of rail in a fortnight.

The item refers to worm in the singular, but maybe it means that there were several worms, for the ingesting of 79.2 lb. of steel in two weeks would wear a single worm away by friction alone, or at least give it stomach ulcers.

And now Robert (Believe-It-or-Not) Ripley reports the existence of a bacterium that attacks iron. *Tank pest*, he calls it. It's catching, he says. The microbe is obviously lacking in red corpuscles and is seeking a cure. The specific for anemia is liver extract. One liberal smearing should be enough.

## Problem

••• Last week's farmer received \$7 for the calves, \$4 for the lambs, and \$3 for the pigs.

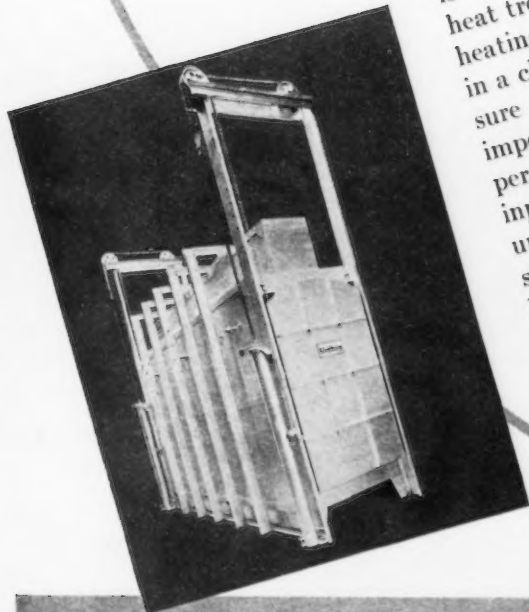
If you get the correct answer to this within five seconds after first reading you're a good man with the dice in a game with lots of side bets:

A man goes into a hardware store to get change for \$5. The clerk, whom he knows, has gone out, so he leaves his \$5 bill on the register and takes out a \$1 bill. He comes back a little later and finds the clerk in. He then gives the clerk \$4 in bills and takes his \$5 bill back. How do they stand?



**Over 90% of North America's leading aircraft manufacturers now use LINDBERG Cyclone Tempering Furnaces!**

YES, it is significant that 9 out of 10 leading North American aircraft manufacturers use Lindberg Cyclone Tempering Furnaces . . . for today, more than ever, both commercial and defense aviation demand, in heat treating, the utmost in accuracy, control, and speed. Increasingly important has become military accuracy in swift mass production. For this reason aircraft manufacturers everywhere look to Lindberg for tempering accuracy—for well they know that each and every portion of every charge, whether it be landing gear forgings, aluminum sub-assemblies, or the smallest rivet, must be heated to precisely uniform temperatures if the peak of strength is to be reached. \* The secret of the Cyclone's tremendous success in heat treating aircraft parts is in the unique Cyclone forced convection heating principle by which great volumes of air are accurately heated in a chamber separate from the work chamber and forced under pressure at 2-mile-a-minute velocity to all parts of the charge—making it impossible for temperature differences to exist. \* Supplementing temperature uniformity, the Lindberg Control accurately apportions heat input, eliminating heat supply surges or deficiencies, and the resulting undesirable jagged control curves. \* Where high military accuracy in swift mass production is demanded, you can definitely depend on the Lindberg Cyclone Tempering Furnace. A special bulletin, "Heat Treating Furnaces for the Aircraft Industry," has been prepared and is available on request. Lindberg Engineering Company, 228 North Laflin St., Chicago.



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**LINDBERG FURNACES**

CYCLONE FOR TEMPERING • HYDRIZING FOR HARDENING



# News of Industry...

## Steel Industry Plans To Spend \$282 Millions for Equipment in '41

...Steel companies plan to spend more than \$282,000,000 for new productive equipment during 1941 to meet the expected expansion in the nation's requirements for steel for defense and other purposes, according to information furnished to the American Iron and Steel Institute by 160 companies representing more than 95 per cent of the steelmaking capacity of the country.

The expenditure of this sum is expected to gear the industry for increased production during the defense emergency, although some of the new equipment will not be available until next year. With the sum budgeted for this year, the sum spent or about to be spent for new equipment by the industry since the beginning of 1935 is brought to a total of \$1,390,000,000.

From the beginning of 1935 to the end of 1940, steel ingot capacity was increased from approximately 78,000,000 net tons to approximately 83,000,000 net tons, and further increases will be effected this year with the sums provided for such enlargement. Productive capacity for pig iron, coke and finished steel is also being increased.

To forestall any bottleneck in the various phases of steel production, actual expenditures in 1940 for new equipment were sharply increased and totaled \$25,000,000 in excess of the amount budgeted at the beginning of the year before the defense program was expanded, the institute survey showed.

The total actually spent was over \$171,000,000, whereas expenditures contemplated at the begin-

ning of the year had been estimated at only \$146,000,000. No small part of that increase was due to the building of new electric furnaces not scheduled at the beginning of the year.

The new equipment budget for 1941 is nearly twice as much as the amount budgeted last year, and is approximately 65 per cent in excess of the amount actually spent for this purpose last year.

This year's program covers the entire range of steel mill productive facilities and provides additional coke, pig iron and steel ingot capacity as well as equipment for many varieties of rolled and finished steel. Where potential bottlenecks have been located by individual companies, new equipment is to be installed so that the operating level of the industry may be maintained at a high level.

The breadth of the construction program is shown by the fact that 15 companies are contemplating expenditures for new rolling mills;

**TOMAHAWKS:** Planes like this being made at the Curtiss-Wright Corp. plant at Buffalo are called "Tomahawks" by the British. It is the export version of the Curtiss P-40 pursuit plane.





29 companies for modernization or enlargement of existing rolling mills; 23 companies for new wire drawing facilities; 22 companies for new cold finishing equipment; 40 companies for new heat treating equipment.

Fourteen companies plan to install new blast furnace equipment and several other companies propose to build new blast furnaces, open hearth furnaces for steel and new coke ovens. Twelve companies have budgeted expenditures for new electric furnaces to increase the output of unfinished steel.

### Hot Dip Galvanizers Annual Meeting Feb. 27-28

Pittsburgh

••• The 1941 annual meeting of the American Hot Dip Galvanizers Association will be held at the William Penn Hotel, Pittsburgh, on Thursday and Friday, Feb. 27-28. The first event on the 2-day program will be a technical session at which time papers will be presented on the following subjects:

Dr. R. W. Sandelin, metallurgist, Atlantic Steel Co., Atlanta, will talk on "Influence of the Base Metal on Hot Dip Galvanized Coatings"; Dr. R. J. Kepfer, research chemist, E. I. duPont de Nemours & Co., Ohio, will discuss "Galvanizing Preflux" solutions.

The balance of the technical session will be devoted to an open forum for the discussion of any technical or practical problems. The association will be hosts at luncheon and will elect directors.

### Army Lets Airport Building Contracts

Washington

••• The War Department has announced that it has authorized construction of temporary buildings and other facilities at the municipal airports at Meridian, Miss., costing \$1,515,090, and East Baton Rouge, La., costing \$1,441,340 and at Eglin Field, Valpariso, Fla., costing \$1,205,550.

## Restriction on Defense Plant Strikes Urged

Columbus, Ohio

••• In order to place some restriction on the wanton calling of strikes at the whim of business agents or small minorities, strikes in defense industries should be outlawed but not prohibited, said Col. William Frew Long, general manager of the Associated Industries of Cleveland, speaking here at the Columbus Town Meeting on Monday, Jan. 21.

Pointing out that the meaning of the word "outlaw" is not synonymous with "prohibit," Col. Long suggested that Congress pass an act which would provide that strikes could not be called unless two-thirds of all the employees in the plant sanctioned such a strike by secret ballot; if the strike were in violation of the terms of a collective contract or of an arbitration agreement; if the purpose should be to force another labor organization to recognize the alleged right of the striking union to represent certain employees; and unless 30 days' notice had been filed with state and national departments of labor.

If a strike should be called in defense industries in violation of the provisions of the proposed new act, the union calling the strike and the men who respond to the call should be deprived of the protection

of the Norris-La Guardia Anti-Injunction Act and the National Labor Relations Act, said Col. Long.

"In addition, the employer should be relieved of all legal restrictions in securing men to replace employees who by striking, under the circumstances confronting us today, have indicated their indifference to the national emergency," said Col. Long. "In other words, anyone may strike, but if he does so, he cannot demand the protection of laws of the nation whose defense program he has jeopardized."

### Knox Urges Overtime Work for Shipyards

Washington

••• Expedition of the defense shipbuilding program was urged by Secretary of the Navy Knox last week in a letter to commandants of navy yards, supervisors of shipbuilding and machinery and naval material inspectors.

Particularly important was the Navy Department's example in urging a six-day 48-hr. week as a first shift as standard by the contractors and by the navy yard, with second and third shifts built up as rapidly and as completely as will insure the greatest progress.

Overtime pay as provided by law, the secretary said, shall be paid to all employees of navy yards entitled to overtime pay. He said that private contractors are to be urged to increase the working force of all departments and offices as rapidly as possible to the end that the maximum productive capacity be obtained and that they work all employees such hours per day or per week as will best further the defense program.

Secretary Knox said that the extra cost of overtime and shift work will be allowed the contractor in accordance with the terms of the contracts.

### Chris-Craft Co. To Equip New Factory

••• The Chris-Craft Co. of Algonac, Mich., has purchased a factory building at Cadillac, Mich., and will spend \$100,000 in equipment and alterations. It will employ about 300 men.

#### Coming Events

Feb. 7 to 8—Iron, Steel and Allied Industries, annual conference, Del Monte, Cal.

March 25 to 29—American Society of Tool Engineers, Machine and Tool Progress Exhibit, Detroit.

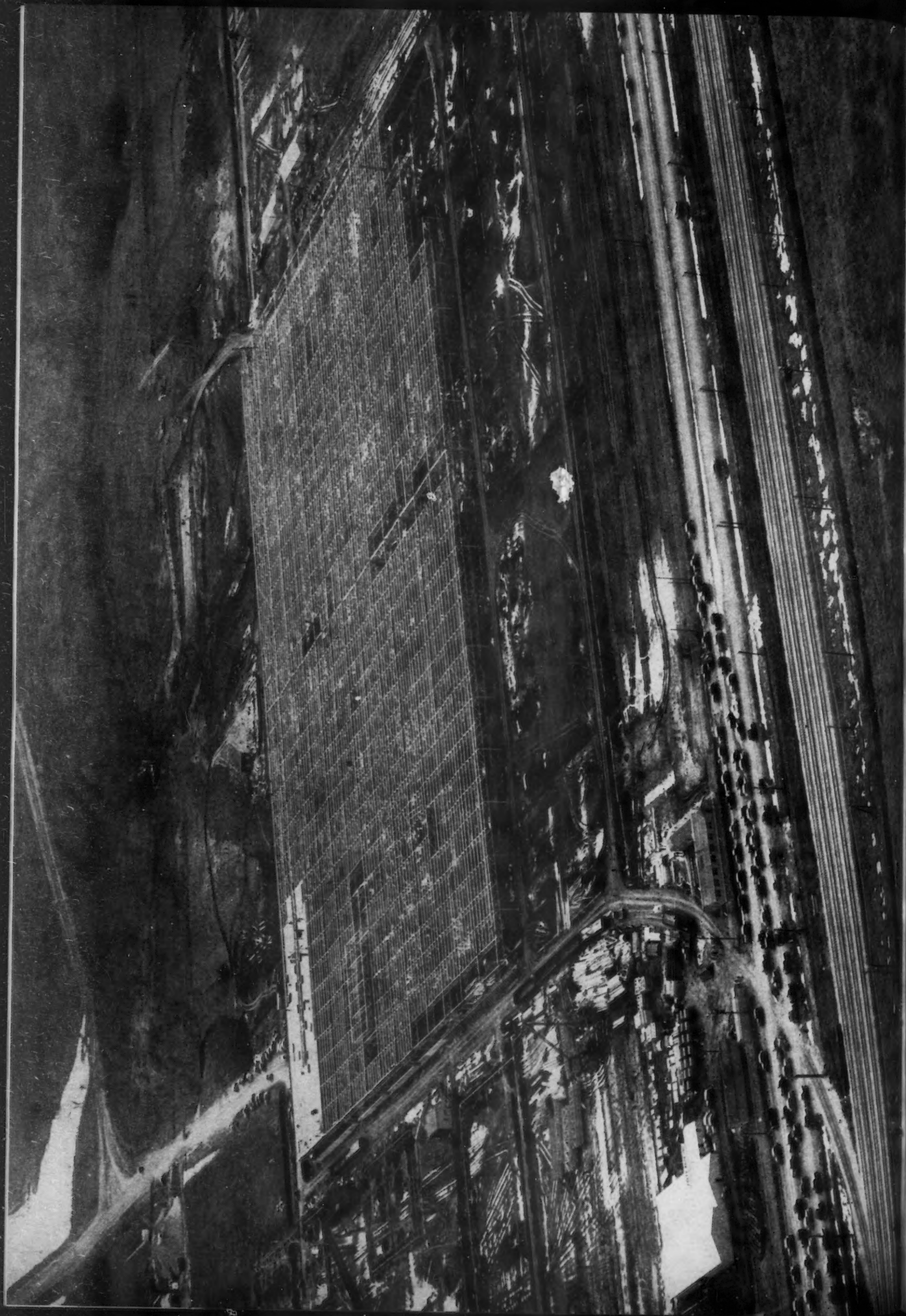
April 16 to 18—Electrochemical Society, Inc., spring meeting, Cleveland.

April 23 to 25—Concrete Reinforcing Steel Institute, annual meeting, Hot Springs, Va.

May 5 to 7—American Gear Manufacturers Association, annual convention, Hot Springs, Va.

May 12 to 15—American Foundrymen's Association, annual meeting, New York.







## Loans For Defense Plants \$349 Millions

Washington

• • • National defense loans aggregating \$349,779,683 by the Defense Plant Corp., and \$127,394,965 by the Reconstruction Finance Corp., were reported last week by Federal Loan Administrator Jesse H. Jones. Of the total commitments made by the RFC subsidiary, \$283,206,197 is for construction of plants and the acquisition of machinery and equipment for manufacturing airplanes and parts, and \$35,550,000 for machine tools. The remainder, Mr. Jones said, is for docks, shipyards and

the manufacture of tanks and tank engines, ordnance and other items.

Some of the companies receiving commitments, amounts involved, and the purposes of the loans follows:

**Baldwin Locomotive Works**, Ed-dystone, Pa., \$3,000,000 for machinery to make tanks; **Bendix Aviation Corp.**, South Bend, Ind., \$10,000,000 for plant expansion, equipment and machinery for production of parts, carburetors and landing gear for airplanes; **Bendix Aviation Corp.**, Bendix, N. J., \$11,500,000 for plant construction and expansion, and equipment and machinery for producing parts, accessories, and instruments for airplanes; **Consolidated Aircraft Corp.**, \$14,446,929 for plant construction and equipment and machinery for manufacture of airplanes and parts.

**Curtiss-Wright Corp.**, Buffalo, \$14,989,100 for building and equipping plants and buying machinery for manufacture of aircraft; \$13,471,150 to the same company for similar purposes; **Wright Aeronautical Corp.**, Paterson, N. J., and **Hamilton County**, Ohio, \$57,000,000 for building and equipping plant for manufacture of aircraft engines; **Willamette Iron & Steel Corp.**, Portland, Oregon, \$1,000,000 for buying land and machinery, and building ships, docks, ways and buildings.

**Unnamed machine tool manufacturers** received \$35,000,000 for use in the manufacture of arms, ammunition and implements of war.

**Automobile manufacturers** received total commitments of \$96,218,280, according to the tabulation.

The companies receiving loans from the Defense Loan Corp., the amounts involved, and the purposes for which they are to be used, follow:

**General Motors Corp.**, Detroit, \$32,000,000 for building and equipping plant and buying machinery for the manufacture of airplane motors.

**Graham-Paige Motors Corp.**, Detroit, \$1,803,280 for machinery to manufacture aircraft engine parts.

**Packard Motor Car Co.**, Detroit, \$2,504,611 for building and equipping plant and buying machinery for manufacturing extruded prod-

ucts for the manufacture of aircraft.

**Studebaker Corp.**, Chicago, \$50,000,000 for building and equipping plant and buying machinery for manufacture and furnishing of aircraft engines and parts.

**Willys-Overland Motors, Inc.**, Toledo, \$1,700,000 for machinery, equipment and facilities for making 155 mm. shells.

Commitments for national defense made direct by the RFC went to these companies.

**Graham-Paige Motors Corp.**, Detroit, \$1,280,000 for working capital, burden, machinery and tools, miscellaneous to complete Army and Navy contracts for firing pins, connecting rods, breech housing, cartridge guide plates, and operating levers.

**American Bantam Car Co.**, Butler, Pa., \$1,300,000 for working capital, machinery and equipment to complete contracts for manufacturing Army reconnaissance cars; \$10,000 for additional working capital; and \$125,000 for working capital for production of reconnaissance cars.

## Bethlehem Drops Labor Board Appeal

Washington

• • • At the request of counsel for the Bethlehem Shipbuilding Corp., the Supreme Court on Monday dismissed the company's petition which had sought review of a National Labor Relations Board order requiring disestablishment of employee representation plans at the Fore River and Boston plants in Massachusetts.

The NLRB order directed the company to cease and desist from interfering with the employees' representation plan; to withdraw recognition from and disestablish such plans; to bargain collectively with Local 25 of the Industrial Union as the exclusive representative of certain of its employees in Boston; and to embody any understanding reached with the union in a signed agreement.

The United States Circuit Court of Appeals for the First Circuit upheld the NLRB order on Oct. 8, and the company sought Supreme Court review on Nov. 20. Counsel for Bethlehem subsequently asked the court to dismiss the petition.

## Large Aircraft Plant To Be Completed in Few Months' Work

AN EXAMPLE OF THE SPEED with which national defense plants are being built is the new plant of the North American Aviation Co. at Grand Prairie, Tex., near Dallas, for which ground was broken on Nov. 16 by the general contractors, James Stewart & Co., New York, with completion scheduled for March 1. The aerial photograph was taken on Jan. 8. The plant is 925 by 1000 ft. and with adjoining structures will cover more than 1,000,000 sq. ft. It is to be a blackout plant, with no windows, completely air conditioned and lighted by fluorescent lamps. For camouflage the roof will be covered with a small golf course so that it will not be discernible from the air. The cross bracing in the roof construction was designed for protection against air raids. A direct hit, it is believed, would affect only the bay on which it was scored and there would be no shattering in other bays. As a protection against indirect hits, the plant is to be surrounded by a 5-ft. concrete wall and in front of every door will be a reinforced concrete screen. Thus if a bomb struck outside the plant no fragments would penetrate the interior. The plant, which will embody straightline assembly features, was designed in 21 days by J. Gordon Turnbull, engineer of Cleveland, in association with Allen & Kelley, Indianapolis architects. The cost of the plant, without equipment, will be about \$5,000,000.



## French Steel Plants Will Be Modernized

Lisbon

• • • It is claimed from the German side that all Northern and Eastern French steel plants will be operating again by the end of January. According to a statement by the German Iron and Steel Cartel, most of the works in the Lorraine district are considered obsolete and a large reorganization is to be undertaken which is expected to require four years for completion. Apparently 11 blast furnaces will be constructed or modernized, steel works improved, and a total of 178,000,000 marks invested by six leading German steel firms.

The German price index showed an increase of 0.8 per cent in the third quarter of 1940. Greater quantities of steel have been appropriated for domestic consumption, particularly for construction

of bridges, roads and houses. The highway construction program is consuming a considerable amount of steel, more than 900 bridges being needed for two trunk roads alone. These extend from Berlin to Danzig and from Breslau to Vienna.

The value of German goods exported to the Far East via Siberia are said to amount to \$19,300,000 and the imports from those markets of \$16,800,000. Exports consisted to 50 per cent of machinery, 20 per cent chemicals and pharmaceuticals, 10 per cent arms, 5 per cent aircraft material and 15 per cent of other materials. Exports of machinery to Russia is said to exceed \$17,000,000 and slightly lower prices for certain non-ferrous articles were agreed on.

Prices for steel in the "unoccupied zone" of France have been advanced as from Jan. 10 by 20 to 35 per cent.

Under the new German-Rumanian trade agreement 147 various

factories will be constructed in Rumania by German companies. Forty per cent of these factories will be in the metal-working field.

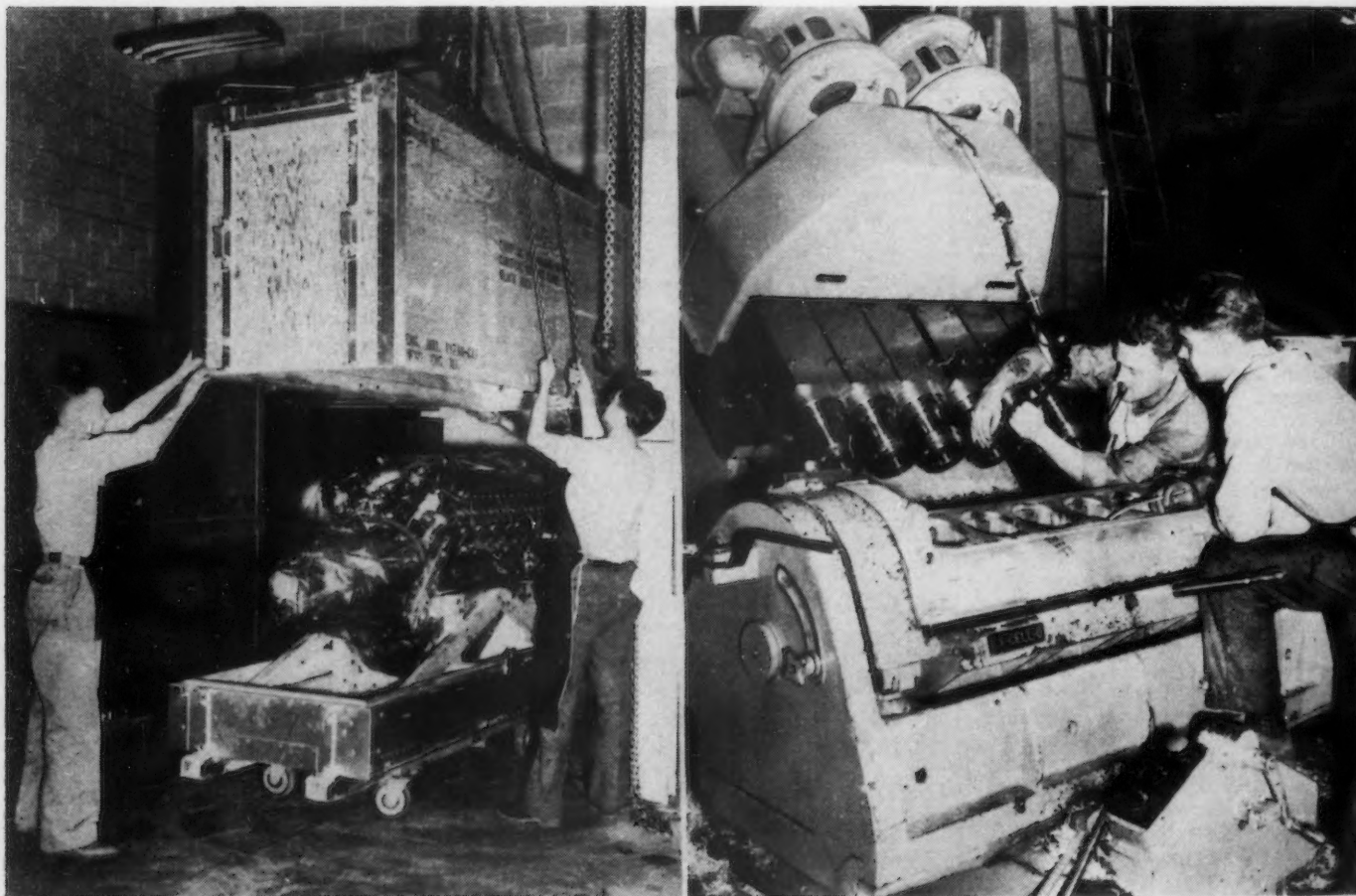
Fantastic prices are being paid at present for comparatively small Portuguese tungsten and tin ore shipments, mostly going to England. Portuguese ores are preferred because of the short sea route and \$1,600 are paid for the ton of 60 per cent  $WO_3$  and 20 per cent tin ore fetches a price of \$290. The production is sold for months to come.

## Inland's Ingot Capacity Now 3,300,000 Net Tons

• • • Inland Steel Co. has advised the American Iron and Steel Institute that its rated annual ingot capacity should be listed as 3,300,000 net tons instead of 3,100,000 net tons heretofore used. The company has installed no new furnaces. However, improvements in methods of production and the installation of auxiliary equipment, supported by the experience of the past six months, justify the increase, according to Inland officials.

**LIQUID-COOLED ENGINES:** At its plant in Indianapolis, the Allison division of General Motors is turning out 350 of these liquid-cooled airplane engines monthly. Late in 1941 the plant expects to turn out 1000 monthly. At left below, an engine is being crated for delivery to a plane factory. At right, one of 2000 trainees at the Allison plant watches a boring operation.

Photo by International

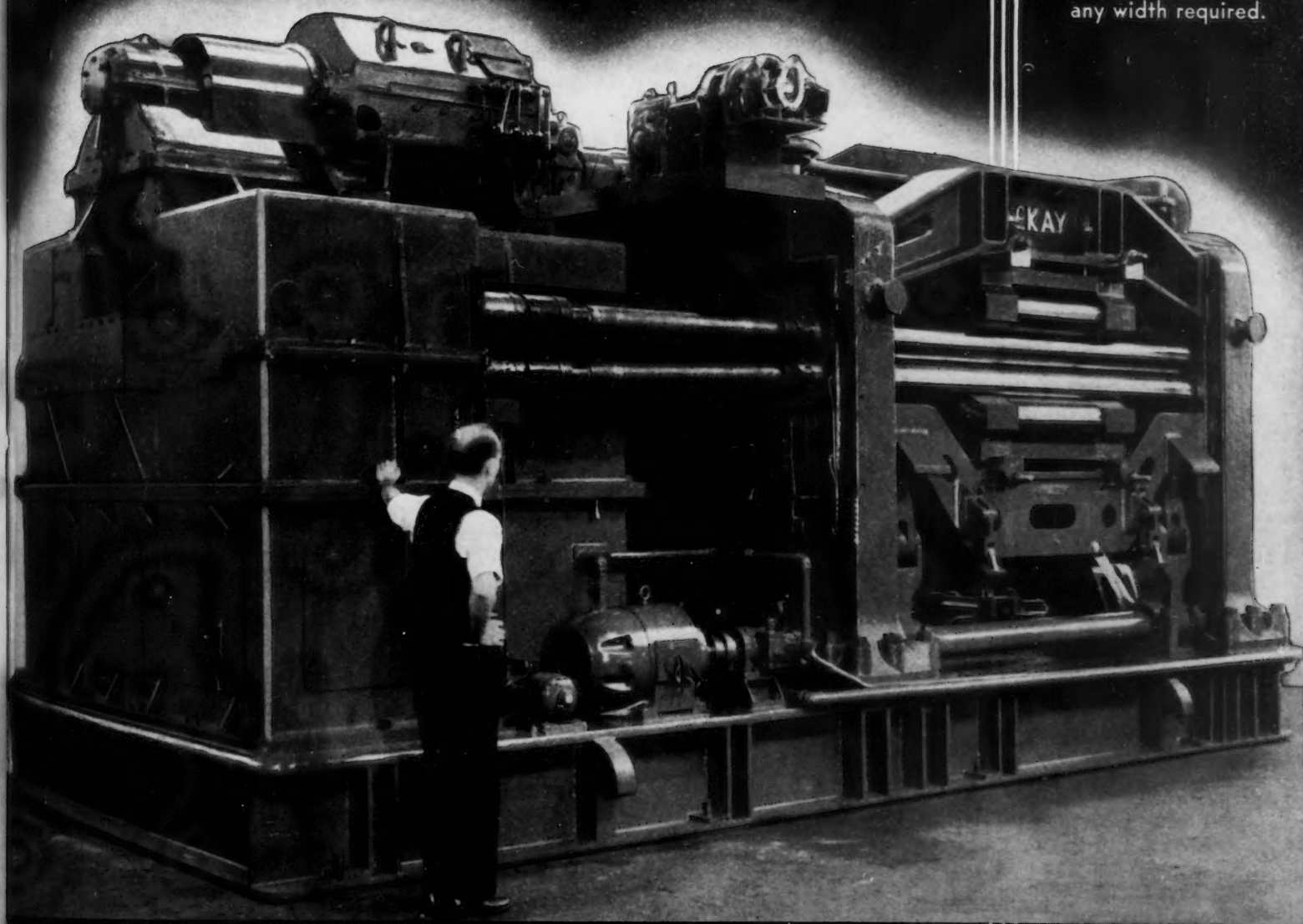




# McKAY

IMPROVED HEAVY DUTY ROLLER LEVELLER

IDEAL FOR LEVELLING LIGHT ARMOR PLATE



Massively built to accommodate the maximum pressure required to flatten high tensile steel.

The feed-in rolls can be hydraulically opened to a maximum of 12" to receive and straighten ends that are badly bent.

This leveller will flatten a wide range of thickness in plates and can be built to handle any width required.

*The* **McKAY MACHINE** *Company*

ENGINEERS AND MANUFACTURERS OF SHEET, TIN, AND STRIP MILL EQUIPMENT

YOUNGSTOWN, OHIO

ASSOCIATED COMPANY

The WEAN ENGINEERING CO., Inc. • WARREN, OHIO

Write The McKay Machine Company for information about any levelling problem that you may have.



## Steel, Scrap Men Give 43 Ambulances to Britain

The iron and steel industry is aiding the British-American Ambulance Corps. Largest of the donations came from the Institute of Scrap Iron and Steel of America, which voted at its annual meeting in Baltimore, Md., to give 20 ambulances or \$27,000 to the Ambulance Corps for shipment to Egypt, Greece and Great Britain.

H. E. Mordan, director of the corps' industrial division, reveals that iron and steel companies have contributed 43 ambulances to date for Britain and other Dominion fighting fronts, the total representing \$58,050 at \$1,350 per ambulance.

Ten ambulances were donated by the Alan Wood Steel Co., of Conshohocken, Pa., while the Shenango Furnace Co., of Pittsburgh, Pa., added five. Three others came from the Pittsburgh Coal & Iron Co., and another two from the Struthers Iron & Steel Co., of Struthers, Ohio. Woodward Iron Co., of Woodward, Ala., contributed two and the other ambulance was presented by E. & G. Brooke Iron Co., Birdsboro, Pa.

## Employees Honor Roemer, Sharon Steel President

Sharon, Pa.

• • • Around 500 persons, the majority being employees of the Sharon and Lowellville works of Sharon Steel Corp., honored Henry A. Roemer, president of the corporation, at a dinner here Jan. 17 celebrating his 10th anniversary with the company.

Speakers recalled how Mr. Roemer took the helm of the old Sharon Steel Hoop Co. and guided it under the name of Sharon Steel Corp. to a place among the leading small independent steel companies. Mr. Roemer paid tribute to the men who helped him in the battle during the dark depression days.

"There may be rough days ahead," said Mr. Roemer, "but I know we can conquer them as we did in the past. Sharon Steel's financial report for 1940 will be among the best and can be compared with any steel company of its size."

## Army Gives \$21,837 Order for Horseshoes

Chicago

• • • That horses will still be charging in Uncle Sam's army is shown by the order for \$21,837 worth of horseshoes received by the Phoenix Mfg. Co., Joliet, Ill., for the Quartermaster Corp., U. S. A., in Indiana.

## ASTE Convention to Consider Production for Defense

• • • Needs of all branches of the defense program will be discussed during the Machine Tool & Progress Exhibition, March 25 to 29 in Detroit's Convention Hall. Held in conjunction with the annual meeting of the American Society of Tool Engineers, the theme of the convention will be "Education for National Defense."

On March 24 a special preview of the exhibition will be held for invited guests, following a dinner for prominent officials of industry and government.

On Tuesday, the 25th, papers on tooling for aircraft engine and fuselage production will be heard. Following a day devoted to the Navy's problems, Thursday will be given to talks bearing on education for defense, discussed both from governmental and industrial viewpoints and giving a picture of ASTE activities in that field.

## Higher Advertising Budgets Are Forecast

• • • Advertising budgets of industrial companies are being increased materially for 1941 and all indications point to at least a maintenance of the current increases during the defense emergency. Members of the Exhibitors Advisory Council and the Association of Exhibit Managers meeting at the American Society for Metals headquarters in Cleveland came to this conclusion following the close of their one-day meeting here. Trade and business paper advertising and industrial shows will be the primary beneficiaries of these increases.

## Controlled Prices Cause Low Profits for British Mills

London

• • • The South Durham Steel & Iron Co., has just announced a slump in profits from £355,463 to £188,576. As a result stockholders will get this year the poorest dividends since the steel slump of 1932. The only explanation given by the directors is that "the reduced profits are due to circumstances outside the control of the company, the undertaking being a controlled establishment."

Generally speaking, the industry is accepting fairly well the existing relationship between costs and prices, albeit a number of the less modern firms realize that it will involve them in heavy financial sacrifices.

## Westinghouse to Triple Defense Material Output

Pittsburgh

• • • Westinghouse Electric & Mfg. Co. in 1941 will at least triple its 1940 defense production (approximately \$18,000,000), according to A. W. Robertson, board chairman. Two hundred Westinghouse executives and managers met here last week to discuss the production of national defense materials.

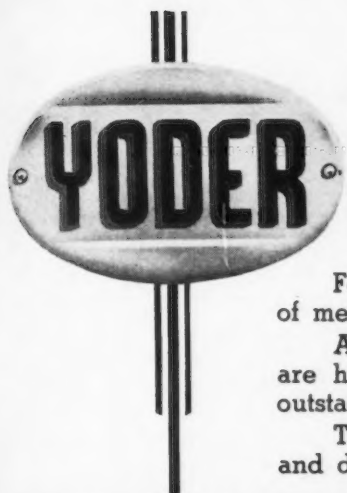
Mr. Robertson said: "We have at no time held back. The work of national defense is moving forward and soon even the most severe critics will see results that will satisfy them. Any other war was child's play to what we have to meet in this war. And the more difficult the offense and defense of modern war, the more time it takes to get ready for it."

## More Standardization Found Needed in Defense

Chicago

• • • A call for standardization of designs if defense production is to speed up was made here by representatives of Midwestern manufacturing concerns. Declaring that even such small items as "nuts and bolts" are not uniform in defense orders, the Mid-West Manufacturers Association declared that standardization was a necessary step if the defense program is to move rapidly.





# A Respected Name In METAL WORKING EQUIPMENT

For over 30 years the name "YODER" has been identified with the development of metal forming machinery to increase production and lower costs.

A few items of the complete line, now widely accepted by leading organizations, are here illustrated. Literature is available describing the distinctive features and outstanding performance of each machine.

The services of Yoder Engineers are also available to aid in the solution of new and difficult metal forming problems.

## ROLL FORMING MACHINES

Yoder pioneered this speedy and economical method of forming tubing, mouldings, weatherstripping, angles, channels, etc., successfully handling various metals including: hot or cold rolled steel, stainless steel, bronze, brass, copper, aluminum, high-strength alloys, etc.

Machines are available in a range of types and sizes for all purposes.

## FLYING CUT-OFF MACHINES

For cutting tubing, moulding, wire, rods, strip metal, etc., with a plus or minus of  $\frac{1}{64}$ " at speeds up to 150 feet per minute.

The material strikes a trigger, releasing a die which cuts it instantly, clean and without burrs, and then returns to position for the next cut.

These machines are for use in line with roll forming machines and may be used with straightening rolls or with leveling rolls.

## COMPLETE TUBE MILLS

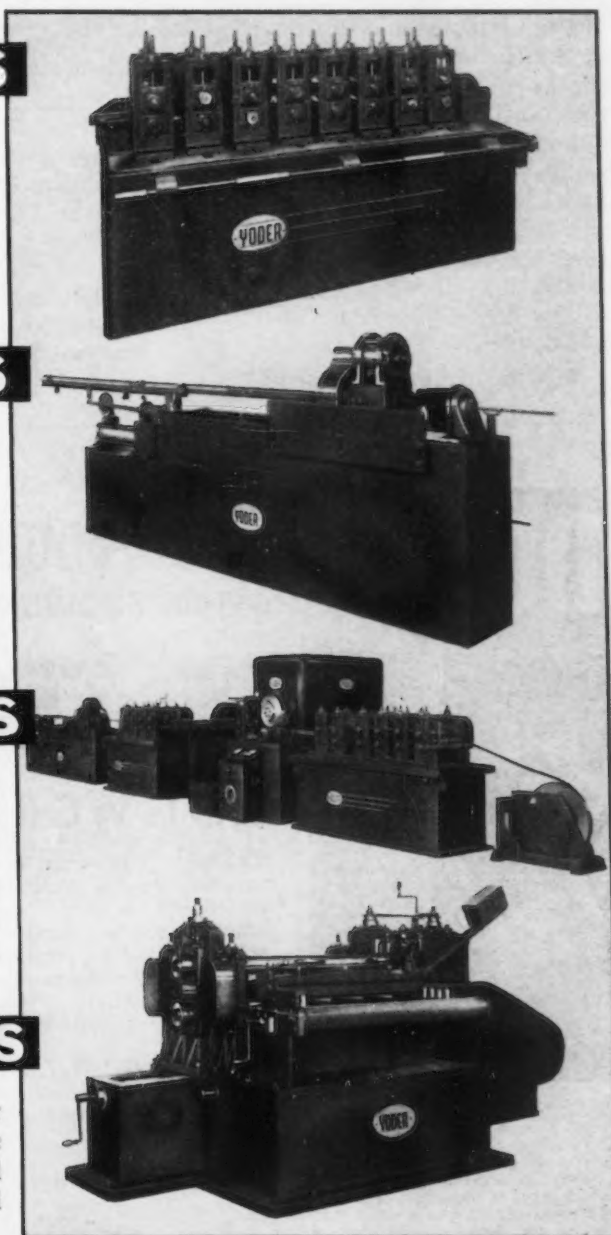
In sizes to form tubing from  $\frac{1}{8}$ " diameter .010" wall to 26" diameter  $\frac{1}{2}$ " wall; butted joint, lock seam or welded, by gas, arc or resistance.

Features include: full view and complete control from one central station, adjustment of speed and heat for various metals, high power factor and electrical efficiency, quick change for different sizes of tubes.

## ROTARY GANG SLITTERS

Slitting and side trimming shears are available for handling tin plate, light sheets, brass, aluminum and zinc in widths up to 42 inches; also heavier machines for steel mills and large fabricators to handle thicker sheets and strips in widths up to 120 inches.

Yoder also engineers and builds complete slitting lines with all auxiliary equipment.



THE

YODER

COMPANY

5500 WALWORTH AVENUE  
CLEVELAND, OHIO

### YODER ALSO MAKES:

BEADING MACHINES  
BENDING MACHINES

POWER HAMMERS  
BRAKE SHOE MACHINES

TENSION REELS  
SCRAP CUTTERS

COILERS UNCOILERS  
SPECIAL MACHINERY.



## Plane Priorities Group Personnel Announced

Washington

••• The complete personnel of the commercial aircraft priorities committee, as announced by Edward R. Stettinius, Jr., director of priorities of the Office of Production Management, includes the following:

Col. John H. Jouett, president, Aeronautical Chamber of Commerce; Col. Donald H. Connolly, of the Civil Aeronautics Board; C. R. Smith, aeronautical consultant to the transportation division of the National Defense Advisory Commission; Capt. D. C. Ramsey, representing the Navy; Col. E. L. Lyons, representing the Army; and Merrill C. Meigs, head of the aeronautical section of OPM's production division. Mr. Meigs will act as ex-officio member of the committee.

Mr. Stettinius had previously

## C-I Expands Capacity Of Light Armor Plate

••• Carnegie-Illinois Steel Corp., subsidiary of United States Steel Corp., is installing additional facilities for production of light armor plate and shafts at its Homestead and Clairton, Pa., plants. The new expansion program, involving installations not previously announced, will provide for casting pits and handling facilities for large ingots at Clairton and for preheating and annealing furnaces, and casting and handling equipment at Homestead.

designated Arthur D. Whiteside, president of Dun & Bradstreet and former NRA administrator, as executive officer. The committee's job is to recommend policies on priorities to Director of Priorities Stettinius, whose division includes consumer, price and labor advisory consultants.

## Rheem Mfg. Co. To Build Second Plant

Chicago

••• Rheem Mfg. Co. will build a second plant here at a cost of about \$500,000. There will be two separate one-story structures, each about 150 x 500 ft. The additions will provide another 150,000 sq. ft. of space. Of the expansion sum, about \$150,000 will be spent for new equipment. Although the firm has a large order for bomb fins and practice bombs, the defense work will generally be carried on in the old plant while the new buildings will be devoted to regular production. The builder is Brown & Matthews, Inc., New York.

## Briggs Casting Plant To Operate in May

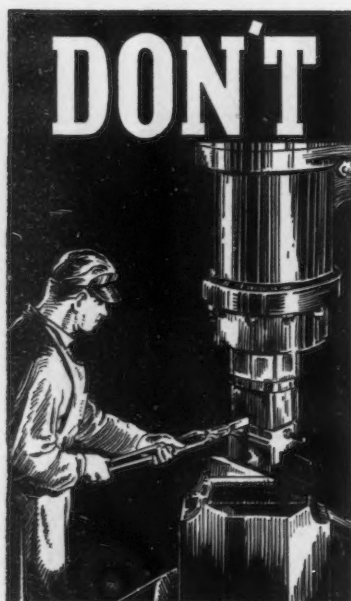
Cleveland

••• Operations in the plant being readied here by Briggs Mfg. Co., Detroit, for the production of small non-ferrous castings are expected to begin in May, according to company officials who are rushing the installation of equipment. The venture is described as being purely commercial at this time and independent of the automotive industry, although production in connection with the national defense program may be undertaken eventually.

## Gary Superintendent Honored at Banquet

Gary, Ind.

••• A testimonial banquet was tendered James Corcoran, retiring mechanical superintendent of the Gary billet mill and 40-in. bloomer mill after serving 38 years with the United States Steel Corp. Tributes to Corcoran were paid by Stephen M. Jenks, general superintendent; E. G. Hill, assistant general superintendent; Percy J. Hake, superintendent of the maintenance operating department; and J. C. Wilkins, superintendent of the billet mill. Barney Moss, who succeeds Corcoran, presented the retiring employee with an easy chair and foot stool—the gift of friends.



## LOSE YOUR TEMPER WHEN FORMING HOT METALS

*Specify*

## JESSOP "2B" HOT WORK STEELS

JESSOP "2B" Hot Work Steels are high tungsten steels which have been specially developed to keep their temper under the most severe hot working conditions. Well substantiated performance data prove that "2B" can greatly reduce die costs for applications where high temperature and other severe conditions would ruin other steels.

JESSOP "2B" Hot Work Steels are supplied in three grades, as follows:

2B HC (high carbon), for use where tools must have maximum hardness, as in piercing punches and cut-off tools.

2B MC (medium carbon), for use where tools must be quite hard while withstanding heat checking and retaining a fair degree of toughness.

2B LC (low carbon), for use where toughness combined with moderate hardness is desired and for tools which have a tendency to split or crack.

A Jessop engineer will gladly assist you in your hot working problems—without cost or obligation. Write JESSOP STEEL CO., 537 Green St., Washington, Pa.



**Jessop Steels of America**

CARBON-HIGH SPEED-SPECIAL ALLOY  
STAINLESS and COMPOSITE STEELS







## OUR HAT'S *in the Ring, too!*

Our Stamping Division, like many other industrial concerns, is actively engaged in Defence Program production. This work here---as in nearly every assigned plant---gets the green light.

These national emergency demands have, however, effected our normal schedules.

So, we ask you---if you are planning a pressed steel part or product which you intend to order from us or ask us to quote--to anticipate your delivery requirements in advance.

# TRANSUE & WILLIAMS

ALLIANCE, OHIO

## *Deep Drawn Stampings*

SALES OFFICES: New York, Philadelphia, Chicago, Detroit, Indianapolis, Cleveland



## We Want Checkoff, SWOC Official Says

Gary, Ind.

• • • "You won't get better agreements or working conditions or living standards unless you build up the local union membership to 100 per cent," David J. McDonald, national secretary-treasurer of the CIO Steel Workers' Organizing

Committee, told the union's membership here. McDonald advised members the greatest help they could give Philip Murray, CIO chairman, in his demands for higher wages, closed shop, etc., was to build up the local union's roster. "I'll tell the world we want the check-off and a lot of other things, but I'm not saying we are going to get them.



## FLASH from FORGINGS What's It Cost You?

Flash (the metal that is in excess of that required to fill out the final impression in a pair of dies) is worthless to you. Yet flash is a part of the cost of every forging you buy. What flash costs you depends upon a number of factors. Mechanical foresight in laying out the job, die making, the skill of hammer men, and so on, are some of the things in which there can be a great difference. Excessive flash often indicates excessive costs for machining and finishing. Buyers of forgings who know that the

true cost of a forging is its cost at the point of assembly buy forgings on which the cost of flash has been reduced to a minimum. T & W forgings usually cost less at the point of assembly. Consult a T & W forging engineer on your next forging job.



**TRANSUE & WILLIAMS**  
STEEL FORGING CORPORATION  
ALLIANCE, OHIO

Sales Offices: New York, Philadelphia, Chicago, Indianapolis, Detroit and Cleveland

## War Causes British Razor Blade Shortage

London

• • • One of the industries that is suffering as a result of the diversion of steel supplies to munitions plants is that devoted to razor blade manufacture. A British Board of Trade order cutting down to one-fourth the supplies of blades for sale in the United Kingdom has caused consternation throughout the trade.

This cut applies to the six months from Dec. 1 until the end of next May, and it means that retailers cannot get more than 25 per cent of what they had in the last corresponding period. It follows upon a cut to 66 2/3 per cent for the previous six months. This cut applies to the domestic trade only and manufacture on a substantial scale is still permitted for export.

## British Make Survey of Steel Consumers' Stocks

London

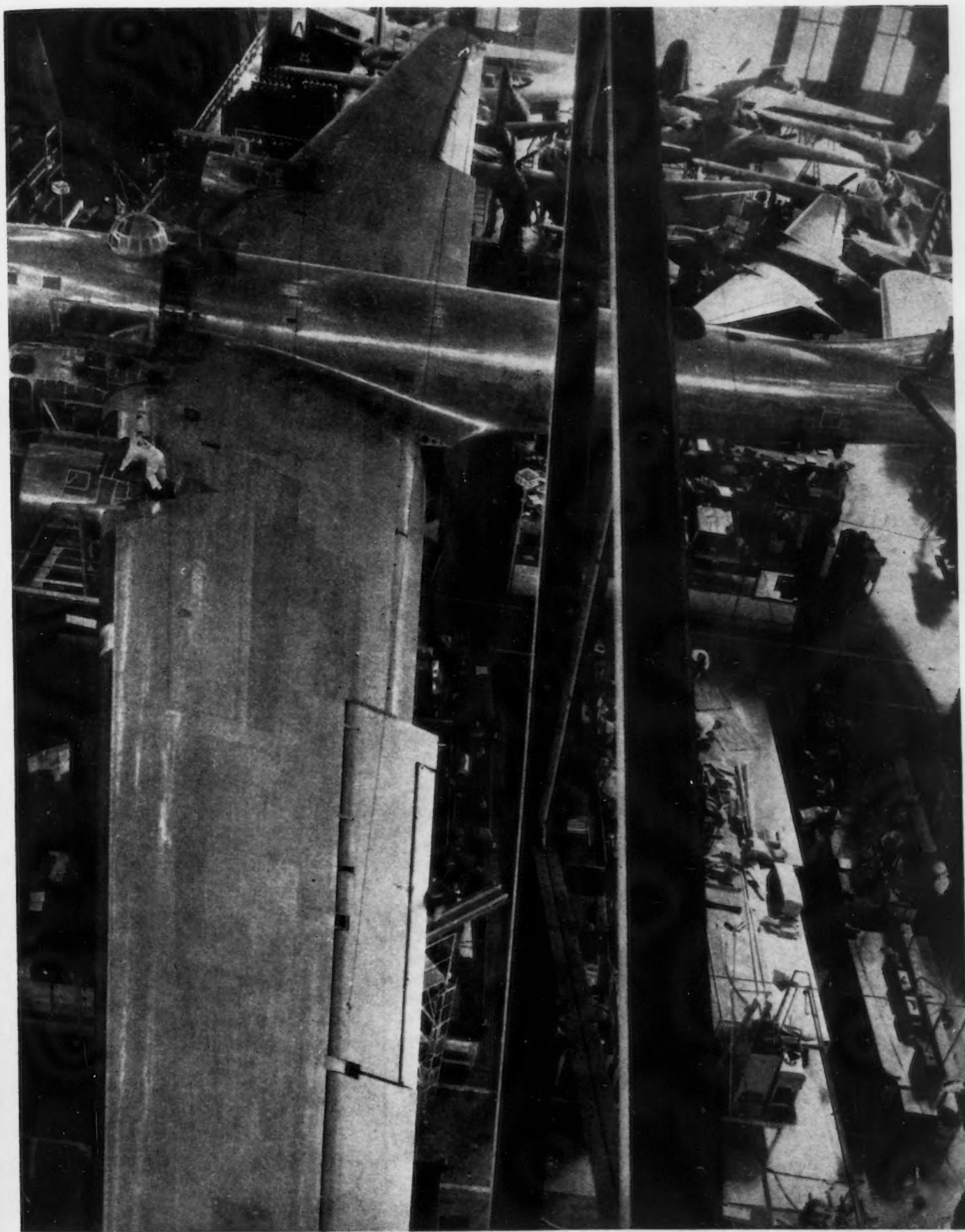
• • • A census of the stocks of steel held by United Kingdom consumers is being undertaken by the British Iron and Steel Control at the request of the Ministry of Supply. Regular returns of current holdings are made by state departments, by those who make or stock steel products, and by structural engineers so that already a substantial volume of data regarding stocks is in the hands of the ministry. Extension of this ascertainment to steel stocks in the hands of all users is a logical step.

## C-I Widens Homestead Roughing Stand to 120 In.

Homestead, Pa.

• • • Carnegie-Illinois Steel Corp.'s 100 in. plate mill here is being altered to the extent of widening the reversing roughing stand so that plate up to 120 in. wide may be reduced in this phase of the finishing mill. The finishing stands are not being widened. Apparently the reversing stand is being utilized to manufacture 120 in. plates which are removed at this point for further processing such as heat treating and final finishing.





*Photo by Wide World*

**212-FT. WING SPREAD:** This recent picture of the B-19, 4-engined, 164,000-lb. bomber under construction at the Douglas Aircraft Corp. plant, Santa Monica, Cal., emphasizes the tremendous wingspread of the ship—212 ft. The plane will carry 125 troops or a load of 18 tons of bombs and has a range of 7500 miles.



## Thompson Products to Build \$15,000,000 Plant

Cleveland

• • • Thompson Products, Inc., maker of aircraft valves and other aircraft parts, has confirmed reports that it is planning to erect a \$15,000,000 to \$20,000,000 plant for the Federal government, which would virtually double its present output. The location probably will be in suburban Euclid or in that general vicinity east of Cleveland.

Parker Appliance Co., manufacturer of aircraft parts and fittings, has purchased property adjoining its present plant at 17313 Euclid Avenue, at a reported cost of around \$30,000. Arthur L. Parker is head of the concern which was organized a few years ago. About 1200 workers are on the payroll.

Jack & Heintz, Inc., which holds large government contracts for electric starters for airplanes, has purchased all of the manufacturing facilities and equipment of the

34-year-old K-W Ignition Corp. here. The 4-story K-W plant with 465 machine tools will be used for the production and testing of electric motors which go into the starter assemblies. Other starter units will be produced at the company's main plant in Bedford and assembly of the motors and parts will be conducted there.

The Jack & Heintz, Inc., which moved here recently from California, expects to start shipping to the government soon. The force at Bedford will be increased with the addition of a night shift. William S. Jack, president, of the company, is widely known in Cleveland, having successfully built up several metal-working concerns, one of which, the Pump Engineering Service Corp., is now a division of Borg Warner Corp.

The new Thompson Products plant is expected to involve 575,000 sq. ft. of floor space; will employ around 5000 persons and produce \$30,000,000 in valves and other

parts per year. Several million dollars in machine tool equipment will be required. Prices have been obtained but orders have not been placed.

## British Mills To Cooperate In Ship Fabrication Plan

London

• • • Steelworkers are to play an important part in the British Government's plan for providing new ships rapidly.

The construction of fabricated ships, which was adopted as an expedient in the last war to replace heavy losses, has received the approval of the Admiralty and this method is being resumed on a substantial scale.

Several steel constructional concerns are taking part in the plan, and old shipyards which have been closed for years are being rapidly equipped as assembly establishments. The vessels are to be of standardized design. The sections will be rolled at the steel mills and then quickly transported to the launching sites.

## Stainless Steel Rod Facilities At Joliet Plant To Be Enlarged

• • • Installation of equipment and alteration of existing facilities for rolling of stainless steel and other special high quality rods is under way at the Collins Street plant, Joliet, Ill., of American Steel & Wire Co., United States Steel Corp. subsidiary.

Equipment is being added to the present merchant rod mill which will allow the rolling of more highly specialized products. The installation includes five 10-inch stands, two reels, a conveyor and two new billet heating furnaces, with provision for a third, besides the necessary handling, driving and control equipment.

The new stands are added to the present two 18-inch roughing stands and seven 12-inch finishing stands. A new building approximately 60 ft. square is being built to house the furnaces.



**SPRINGS**

COIL SPRINGS  
FLAT SPRINGS  
SMALL STAMPINGS  
WIRE FORMS  
SNAP RINGS  
LOCK SPRINGS  
SPECIAL SPRINGS

from EVERY TYPE of Wire up to and including 1/2" diameter

American Springs can always be depended upon to meet specifications and requirements. They are uniform in strength, resiliency and endurance. Scores of leading manufacturers use them exclusively, many of whom have dealt with us continuously for ten to fifteen years or longer.

SEND FOR QUOTATIONS  
**AMERICAN SPRING & MFG. CORP.**  
General Offices at HOLLY, MICHIGAN  
Manufacturing Plants at Holly, Michigan and Belding, Michigan



## Total Building Construction In 1940 Highest in 11 Years

• • • Representing an increase of 13 per cent over 1939, the total of building and engineering contracts awarded in the 37 eastern states during 1940 reached \$4,003,957,000, the largest volume since 1930. Last year was the seventh consecutive year that construction has shown an increase. Non-residential construction increased 34 per cent over the preceding year, residential building was up 20 per cent, while public works and utilities projects advanced by 11 per cent. Defense projects largely offset the decline in civilian public improvement works throughout the year. Residential building was in the largest volume since 1929, consisting principally of small house construction.

A 14 per cent increase over 1940 in total construction is estimated by F. W. Dodge Corp. for this year, assuming that private construction volume will be maintained, the bulk of the increase occurring in public ownership projects.

## O'Leary Builds New Fabricating Plant

Chicago

• • • Ground has been broken for an additional steel fabricating plant costing \$70,000 for Arthur J. O'Leary & Son Co., 5757 West 65th Street, Chicago. The new plant, which adjoins their other buildings in the Clearing industrial district, will be completed in six weeks and will exclusively house operations for the national defense program. It adds about 18,000 sq. ft. to manufacturing capacity.

## Correction

• • • In the article entitled, "The Influence of Basis Metal on the Plate" published in THE IRON AGE, Dec. 26, 1940, page 42-45, the caption under Fig. 7 read, "Comparison of Reflectivity of Silver Deposits on the Basis Metal." This was an error. The various metals which appeared in this illustration were not silver plated. The photograph was taken merely to show the variation of finish on different materials.

# Thomas Strip

COLD ROLLED  
STRIP STEEL

## LABORATORY TESTED FOR SPECIFICATION ACCURACY...



Laboratory approval of each operation by test is an essential part of Thomas Steel processing. Complete records of these tests are made and preserved. Hence, specifications can be met accurately and duplicated consistently. Product improvement and lower cost for fabricators are often the result of this constant laboratory approval.

Always Laboratory  
Approved . . . . .  
**BRIGHT FINISH  
UNCOATED AND  
ELECTRO COATED  
WITH NICKEL,  
ZINC, COPPER,  
BRASS . . . . .**

## THE THOMAS STEEL CO.

SPECIALIZED PRODUCERS OF COLD ROLLED STRIP STEEL  
WARREN, OHIO



# Government Awards

Government awards for the week ended Jan. 18, as announced by the Public Contracts Division, Department of Public Works, follows:

## Iron and Steel Products:

S. G. Adams Co., St. Louis, Mo.; mess trays .....	\$33,708
Air Associates, Inc., Bendix, N. J.; bolts .....	12,537
Airtherm Mfg. Co., St. Louis; buoys .....	11,025
American Bridge Co., Pittsburgh; towers .....	713,950
American Bridge Co., Washington; structural steel .....	25,164
American Car & Foundry Co., New York; armor plates .....	63,196
American Chain & Cable Co., Inc., Bridgeport, Conn.; cores .....	55,000
American Chain Div. of American Chain & Cable Co., Inc., York, Pa.; steel triangles .....	17,894
American Fork & Hoe Co., Cleveland; adzes, hammers, etc. ....	39,084
American Locomotive Co., New York; springs .....	11,167
American Rolling Mill Co., Middletown, Ohio; sheet steel .....	82,335
Anchor Post Fence Co. of Cal., San Francisco; fencing wire .....	10,350
Anthracite Bridge Co., Scranton, Pa.; bridge .....	17,775
Bethlehem Foundry & Mach Co., Bethlehem, Pa.; supports .....	24,825
Bethlehem Steel Export Corp., New York; barge hull .....	246,770
Billings & Spencer Co., Hartford, Conn.; clamps .....	11,363
Boston & Lockport Block Co., New York; steel blocks .....	15,750
Budd Wheel Co., Detroit, Mich.; burster casing .....	8,224,140
Carnegie-Illinois Steel Corp., Washington; steel .....	39,419
Chicago Bridge & Iron Co., Birmingham, Ala.; storage spheres .....	20,900
Cincinnati Tool Co., Cincinnati; clamps .....	10,269
Colorado Fuel & Iron Corp., Denver, Colo.; forgings .....	4,536,000
Colt's Patent Fire Arms Mfg. Co., Hartford, Conn.; pistols .....	246,037
Consolidated Steel Corp., Ltd., Los Angeles; doors for hangars .....	136,893
Crane Co., Long Island City, N. Y.; valves .....	11,790
Crucible Steel Co. of America, New York; steel .....	16,412
Dahlstrom Metallic Door Co., Jamestown, N. Y.; ammunition box .....	41,360
Delaware Tool Steel Corp., Wilmington, Del.; chisels .....	28,568
Dicke Tool Co., Inc., Downers Grove, Ill.; reels .....	11,087
Dienelt & Eshenhardt, Inc., Philadelphia; projectiles .....	16,920
Duplex Mfg. Corp., Sherman, N. Y.; chest .....	12,185
Eureka Vacuum Cleaner Co., Detroit; dies and tools .....	10,276
Gary Steel Products Corp., Norfolk, Va.; barrels .....	102,975
General Motors Corp., Detroit; shell .....	9,505,600
G. M. Co. Mfg. Co., Inc., Long Island City, N. Y.; shells .....	84,900
B. F. Goodrich Co., Akron, Ohio; electroplating tanks .....	25,920
Goodyear Tire & Rubber Co., Inc., Akron, Ohio; electroplating tanks .....	14,690
Jas. A. Gorsuch, Jr., Jeffersonville, Ind.; grates .....	70,000
Gray & Dudley Co., Nashville, Tenn.; griddles .....	54,210

Grinnell Co., Inc., Atlanta, Ga.; piping .....	299,435
R. Hardesty Mfg. Co., Denver, Colo.; pipe and fittings .....	47,494
Hayes Mfg. Corp., Grand Rapids, Mich.; shells .....	42,189
Hercules Food Service Equip., Inc., New York; pans .....	37,999
Isaacson Iron Works, Seattle, Wash.; structural steel .....	22,518
Roy Kahne, Brooklyn, N. Y.; graters .....	10,720
W. H. Kiefaber Co., Dayton, Ohio; taps .....	35,863
Kilby Steel Co., Inc., Anniston, Ala.; mosquito-bar rods .....	125,000
Kilby Steel Co., Anniston, Ala.; cutters .....	167,193
J. Klein & Son, Chicago; pipe ..	370,390
Lalance & Brosjean Mfg. Co., Washington; ladles .....	33,840
MacLan Hardware Co., New York; bits, saws .....	10,729
McCulloch Mfg. Co., South Boston, Mass.; rifle parts .....	20,033
Malleable Steel Range Mfg. Co., South Bend, Ind.; ranges .....	18,810
Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc., Passaic, N. J.; electroplating tanks ..	11,000
Midvale Co., Washington; racks, pinions, etc. ....	255,360
Mosher Steel Co., Houston, Texas; structural steel .....	26,500
National Electrical Mach. Shops, Inc., Washington; bearing circles .....	17,460
Narragansett Machine Co., Providence, R. I.; rifle parts .....	26,585
North & Judd Mfg. Co., New Britain, Conn.; buckles .....	15,676
Peco Mfg. Corp., Philadelphia; fuze bodies .....	360,000
Peerless Pacific Co., Portland, Ore.; steel pipe .....	10,749
Philips & Davies, Inc., Kenton, Ohio; gates and guides .....	35,800
Pittsburgh Des Moines Steel Co., Pittsburgh; training equip. ....	49,677
Fayette R. Plumb, Inc., Philadelphia; axes, hammers, etc. ....	11,494
Polarizing Instrument Co., New York; tubes .....	12,412
Poor & Co., Canton Forge & Axle Works, Canton, Ohio; forgings ..	16,870
Pullman Standard Car Mfg. Co., Butler, Pa.; forgings .....	1,134,000
Rex Body Corporation, Canastota, N. Y.; chests .....	17,325
Rockford Screw Products Co., Rockford, Ill.; bolts .....	13,050
Scheu Products Co., Upland, Cal.; grate bases .....	24,200
Wm. Scrimgeour, Washington; knives .....	14,394
Shuler Axle Co., Inc., Louisville, Ky.; drop forgings .....	20,679
Snap-On Tools Corp., Kenosha, Wis.; wrenches .....	39,311
Standard Dry Kiln Co., Indianapolis, Ind.; dry-kilns .....	10,155
Stanley Tools Div. of the Stanley Works, New Britain, Conn.; planes .....	12,316
Stevens Walden, Inc., Worcester, Mass.; cartridge holders .....	47,808
Swartzbaugh Mfg. Co., Toledo, Ohio; frames .....	34,669
Henry G. Thompson & Son Co., New Haven, Conn.; hacksaw blades .....	66,374
Thorrez & Maes Mfg. Co., Jackson, Mich.; steel bodies .....	216,383

United States Gypsum Co., Chicago; expanded metal .....	16,416
U. S. Steel Export Co., Washington; lock gage .....	570,321
U. S. Steel Export Co., Washington; scows .....	1,116,400
R. Wallace & Sons Mfg. Co., Wallingford, Conn.; knives .....	10,587
Whitehead & Kales Co., Detroit; gate anchorages .....	27,350
Wire Rope Corp. of America, New Haven, Conn.; wire rope .....	10,896
John Wood Mfg. Co., Inc., Conshohocken, Pa.; barrels .....	171,864
Youngstown Sheet & Tube Co., Youngstown, Ohio; steel .....	18,848

## Non-Ferrous Metals and Alloys:

Aluminum Co. of America, Washington; aluminum and aluminum alloy .....	\$120,193
Aluminum Cooking Utensil Co., New Kensington, Pa.; cans, pots ..	56,311
Aluminum Goods Mfg. Co., Manitowoc, Wis.; kettles, pans, aluminum .....	81,320
American Brass Co., Waterbury, Conn.; cartridge discs .....	163,340
American Brass Co., American Metal Hose Branch, Waterbury, Conn.; flexible conduits .....	45,689
American Brass Co., Waterbury, Conn.; bronze .....	37,918
American Button Co., Rochester, N. Y.; buttons .....	12,850
Badger Fire Extinguisher Co., Boston; fire extinguishers .....	11,310
Bridgeport Brass Co., Bridgeport, Conn.; cartridge cases .....	83,925
Bridgeport Brass Co., Bridgeport, Conn.; brass tubes .....	10,185
Chase Brass & Copper Co., Inc., Waterbury, Conn.; pipe, brass ..	16,287
Chase Brass & Copper Co., Inc., Waterbury, Conn.; cartridge discs .....	715,644
C-O-Two Fire Equipment Co., Newark, N. J.; fire ext. systems ..	67,883
Hudson Smelting & Refining Co., Newark, N. J.; lead .....	36,288
International Nickel Co., Inc., New York; nickel-copper .....	99,700
New Jersey Zinc Sales Co., Inc., New York; zinc .....	43,258
Pacific Marine Supply Co., Seattle, Wash.; fire extinguishers .....	11,370
Phosphor Bronze Smelting Co., Philadelphia; bronze .....	21,112
Revere Copper & Brass, Inc., Balt. Div., Baltimore, Md.; cartridge cups .....	361,350
Revere Copper & Brass, Inc., Balt. Div., Baltimore, Md.; brass rod; copper tubing .....	50,837
Revere Copper & Brass, Inc., New Bedford, Mass.; brass .....	44,263
Waterbury Button Co., Waterbury, Conn.; buttons .....	10,727
Welker Mfg. Co., Inc., Cromwell, Conn.; buckles .....	23,038

## Air Corps:

Continental Motors Corp., Detroit; aeronautical engines, and spare parts .....	\$10,715,919
Elgin National Watch Co., Chicago; artillery ammunition components .....	5,550,000
Standard Steel Wks., North Kansas City, Mo.; trailer and dollies ..	941,554

## Ordnance Department:

Omaha Steel Co., Omaha, Neb.; machinery and equipment .....	\$483,875
Stewart Warner Corp., Chicago; machinery and equipment .....	4,000,000
Studebaker Co., South Bend, Ind.; airplane engine, machinery equipment and plant construction ..	49,786,149
Wright Aeronautical Corp., East Paterson, N. J.; plant facilities ..	1,500,000



## GOVERNMENT AWARDS

### Corps of Engineers:

Mack Mfg. Corp., Long Island City N. Y.; tractor-trucks .....	\$869,140
Marietta Mfg. Co., Point Pleasant, W. Va.; all steel, steam, twin-screw, riveted and welded army mine planters .....	8,241,750

### Quartermaster Corps:

Chris-Craft Corporation, Algonac, Mich.; gasoline engines for mine yawls .....	\$15,576
Fargo Motor Co., Detroit; trucks.	8,775,645
Fargo Motor Corp., Detroit; ambulances .....	1,272,240
Freeport Point Shipyard, Inc., Freeport, N. Y.; ambulance boat	21,000
National Supply Co., Philadelphia; diesel engines for boats .....	271,152
Padgett Bros. Co., Dallas, Tex.; Trunk lockers .....	54,400
Schwyder Bros., Inc., Denver, Colo.; trunk lockers .....	136,240
Texas Trunk Co., Inc., San Antonio, Tex.; trunk lockers .....	54,500

### Medical Department:

Fred Haslam Co., Inc., Brooklyn, N. Y.; surgical instruments ..	\$62,075
Kny-Sheerer Corp., Long Island, N. Y.; needle holders .....	41,034
Legion Utensils Corp., Long Island, N. Y.; mess equipment .....	17,304
V. Mueller & Co., Chicago, Ill.; forceps .....	3,427
V. Mueller & Co., Chicago, Ill.; surgical supplies .....	20,089
Polar Ware Co., Sheboygan, Wis.; mess equipment .....	53,211
Ponsell Floor Machine Co., New York; electric polishing machines .....	8,972
Robbins, Myers, Inc., Springfield, Ohio; electric fans .....	16,015
H. W. Schultes, Brooklyn, N. Y.; forceps .....	5,105
William Scrimgeour, Washington, D. C.; serving trays .....	58,000
J. Sklar Mfg. Co., Long Island City, N. Y.; surgical instruments	154,065
Taylor Wharton Iron & Steel Co., High Bridge, N. J.; cylinders..	101,292
Will Corp., New York, N. Y.; electric centrifuge .....	25,671

### Chemical Warfare Service:

Atlas Can Corp., Brooklyn, N. Y.; containers .....	\$1,768
Atlas Powder Co., Philadelphia; machines .....	1,513
Burke Electric Co., Erie, Pa.; motors .....	5,530
Cutter, Wood & Sanderson, Cambridge, Mass.; hole punches ..	1,052
Dahlquist Mfg. Co., Inc., Boston, Mass.; tank and accessories ..	1,569
Federal Press Co., Elkhart, Ind.; presses .....	2,395
Fischer & Porter Co., Philadelphia; rotameters .....	1,238
Greene-Wolfe Co., Inc., Brooklyn, N. Y.; duriron .....	1,206
Gries Reproducer Corp., New York; apparatus .....	24,649
Hercules Powder Co., Wilmington, Del.; detonators .....	4,280
Mathews Conveyor Co., Ellwood City, Pa.; racks and tables ..	1,406
Revere Copper & Brass, Inc., Baltimore, Md.; brass .....	5,037
Edwin B. Stimpson Co., Brooklyn; grommets and washers .....	679
United-Carr Fastener Corp., Cambridge, Mass.; dies, holders, clips .....	3,697
Wallace & Tiernan Co., Inc., Newark, N. J.; valve, pressure.	505
Waterbury Buckle Co., Waterbury, Conn.; buckles .....	9,758

### Other Machinery:

Allis-Chalmers Mfg. Co., Portland, Ore.; tractors .....	\$28,750
Allis-Chalmers Mfg. Co., Milwaukee; trans. assy. ....	34,266
Austin-Hastings Co., Inc., Cambridge, Mass.; drilling machines	19,283
Barco Mfg. Co., Chicago; gasoline hammers .....	394,542
Bay City Shovels, Inc., Bay City, Mich.; crawler shovel .....	15,900
Bertsch & Co., Inc., Cambridge City, Ind.; straightening rolls..	14,535
Bravo Corp., Cleveland; piping system .....	99,981

### 570 Cleveland Companies Lack Defense Orders

#### Cleveland

• • • Questionnaires asking for data on defense facilities available at plants not now on army and navy bidding lists brought replies from 570 manufacturers in the Cleveland Federal Reserve District, according to M. J. Fleming, president of the bank. Additional replies are expected.

Information gathered through the questionnaires is being used to supplement data assembled by the joint munitions board on industrial facilities and will be helpful in eliminating bottlenecks as the defense program expands.

Brown & Sharpe Mfg. Co., Providence, R. I.; milling machines	32,790
Brown & Sharpe Mfg. Co., Providence, R. I.; milling machines..	37,986
Busch Sulzer Bros., Diesel Engine Co., St. Louis, Mo.; engine parts	16,761
Cincinnati Milling Mach. & Cincinnati Grinders, Inc., Cincinnati; milling machines .....	68,897
Davenport Besler Corp., Davenport, Ia.; locomotives .....	90,285
Enterprise Tool & Gear Corp., Detroit; gears .....	10,920
Eversman Mfg. Co., Denver, Colo.; leveler .....	18,700
Florida Weathermakers, Inc., Jacksonville, Fla.; refrigerators ..	233,069
Foot-Burt Co., Cleveland; drill presses .....	11,305
General Electric Co., Washington; locomotives .....	135,225
Gisholt Machine Co., Madison, Wis.; lathe .....	33,054
C. H. Gosiger Machine Co., Dayton, Ohio; lathes .....	60,359
Heald Machine Co., Worcester, Mass.; grinders .....	79,080
Hercules Powder Co., Wilmington, Del.; fuse cutter .....	24,539
Jones & Lamson Machine Co., Springfield, Vt.; lathe equip. ..	16,066
Jones & Lamson Mach. Co., Springfield, Vt.; grinding machine	13,863
Kennedy-Van Saun Mfg. & Eng. Corp., New York; crusher .....	19,404
Landis Tool Co., Waynesboro, Pa.; grinders .....	17,905
Link-Belt Co., Chicago; water screens .....	12,307

Lloyd & Arms, Inc., Philadelphia; honing and lapping .....	35,690
Lloyd & Arms, Inc., Philadelphia; vertical machines .....	15,500
Lodge & Shipley Machine Tool Co., Cincinnati; lathes .....	13,521
Lynd Farquhar Co., Boston; milling machines .....	20,860
W. L. Maxson Corp., New York; computing mach. ....	24,500
Monarch Machine Tool Co., Sidney, Ohio; lathes .....	33,128
Mueller Brass Co., Port Huron, Mich.; engine parts .....	12,987
National Supply Co., Philadelphia; engine parts .....	13,165
Northern Pump Co., Minneapolis, Minn.; pumps .....	186,977
Pa. Flexible Metallic Tubing Co., Philadelphia; engine parts ....	14,959
Pratt & Whitney Div., Niles-Bement-Pond Co., West Hartford, Conn.; profiler .....	12,035
Pratt & Whitney Div., Niles-Bement-Pond Co., West Hartford, Conn.; lathes .....	25,468
Pratt & Whitney Div., Niles-Bement-Pond Co., West Hartford, Conn.; shapers .....	22,097
Pratt & Whitney Div., Niles-Bement-Pond Co., West Hartford, Conn.; drills .....	120,255
Henry Prentiss & Co., Inc., New York; lathes .....	39,228
Riordan Mach. Co., Detroit; milling machines .....	31,348
St. Joe Machines, Inc., St. Joseph, Mich.; laundry presses .....	24,010
Singer Sewing Machine Co., Philadelphia; sewing machines .....	20,959
Stedfast & Roulston, Inc., Boston; boring mills .....	61,454
Swind Machinery Co., Philadelphia; boring machines .....	52,641
Vulcan Iron Works, Wilkes-Barre, Pa.; locomotives .....	61,100
Warner & Swasey Co., Cleveland; lathes .....	182,123
Whitcomb Locomotive Co., Rochelle, Ill.; locomotives .....	61,460

### Goodyear Exhibits Its Products for Defense

• • • Goodyear Tire & Rubber Co., Akron, Ohio, last week invited representatives of the press to an exhibit of its various products for national defense at the Waldorf-Astoria Hotel. Samples of such vital defense products as bullet proof gasoline tanks for military aircraft, barrage balloons for air raid defense, rubber track blocks for combat vehicles, rubber flotation bags designed to keep airplanes from sinking in water, inflatable rubber boats for use by flying personnel when forced down on water and a variety of other items were displayed. The exhibit, arranged with the cooperation of the War and Navy Departments, will be put up in several cities for restricted inspection by the press and the Goodyear sales organization.



## Republic Refunding To Top \$100 Million

••• The registration statement for the largest piece of industrial financing to be offered to the public in recent years is expected to be filed with the SEC by Republic Steel Corp. early in February. Proceeds of the financing, which will be in excess of \$100,000,000, will be used to refund all of the corporation's existing funded debt and to a small extent increase its working funds.

The registration statement will give the full story of Republic's plant expansion and modernization program together with details of its property acquisition during the past five years.

Since 1935 the corporation has increased its steel ingot capacity from 6,779,000 net tons to 7,888,000 net tons and its pig iron capacity from 3,954,000 net tons to 4,830,000 net tons. Most rapid expansion has been in the electric furnace department producing alloy steels, demand for which has shown a sharp upward trend in recent years.

The nation's largest high-grade alloy steel producer, Republic added four 50-ton electric furnaces in 1940, raising its annual capacity from 159,000 tons five years ago to 388,000. Two additional 50-ton furnaces now being installed will add 112,000 tons, giving the corporation an annual capacity of 500,000 net tons.

## U. S. Scrap Embargo Revises Japanese Steel Plans

*London*

••• The United States embargo on scrap has forced the Japanese Government to revise the steel production plan it adopted in 1938. The new plan involves the expansion of steel plants, colliery plants, and of mineral transport.

The date when these extensive changes will produce the required results is not mentioned, but, according to the latest news from Tokyo, steel users have been warned that strict economy will be necessary for a considerable time owing to the critical international situation and the heavy armament requirements of the Government.

## Union Carbide to Build Plant on West Coast

••• J. T. MacBain, assistant works manager of Union Carbide Co. and Electro Metallurgical Co., both units of Union Carbide & Carbon Corp., accompanied by Mr. L. H. Davis, consulting engineer; C. H. Bracket, electrical engineer, and D. C. Duncan, of the Operating Division, is on the West Coast to select a location for a combined carbide and ferro alloy plant, which is to be built immediately on the Pacific Coast.

## Ingalls Completes One Shipway, Starts Another

*Birmingham*

••• Ingalls Shipbuilding Corp. announces work has been completed on an additional shipway at its Pascagoula, Miss., shipyard and construction of a 9600-ton cargo vessel started. Another shipway will be completed next month and construction of another of the 9600-ton cargo vessels begun. Construction of two shipways for naval vessels is under way at the shipyard.

## 1940 Aircraft Output Valued at \$544,440,000

••• The American aircraft manufacturing industry, in response to national defense needs as well as those of Britain, produced \$544,440,000 worth of airplanes, engines and propellers during 1940, according to Col. John H. Jouett, president of the Aeronautical Chamber of Commerce of America, Inc.

"Airplane factory space," said Col. Jouett, "increased from 7,410,133 productive square feet on January 1, 1940, to 12,664,600 on Jan. 1, 1941; and at the same time 15,965,951 additional square feet were under construction. The engine plants, with 2,210,730 square feet on Jan. 1, 1940, expanded to 5,272,479 in 12 months, and were still expanding toward a goal of 9,700,958 sq. ft.

"Propeller plants during the same period increased space from 393,240 sq. ft. to 845,800 sq. ft., and had 108,000 sq. ft. under construction.

## Instructions on Steel Exporting To Britain

••• The British Iron & Steel Corp., 37 Wall Street, New York, which handles all purchases of steel in the United States for Great Britain and Canada in co-operation with the British Purchasing Commission, has issued instructions to steel companies and others covering the procedure to be followed in handling exports of 47 licensable iron and steel products.

Under an arrangement with the Department of State, general licenses have been issued for exports of iron and steel to 23 sections of the British Empire. The British Iron & Steel Corp. is to be responsible for all details in connection with these exports. All exporters are required to send reports covering the tonnage exported under these licenses to the British Iron & Steel Corp. The general licenses cover iron ore, pig iron, ferromanganese, spiegeleisen, ferrosilicon, ferrochrome, ferrotungsten, ferrovanadium, ferrocolumbium, ferrocobalt, ferrocobaltititanium, ferrophosphorus, ferromolybdenum, also semi-finished steel and an inclusive list of finished steel products.

Scrap iron and steel has not been included among the licensable iron and steel products. Licenses for exports of scrap must still be obtained by the exporter from the Department of State.

Members of the Steel Export Association of America and the American Iron and Steel Institute may obtain full lists of licensable products from the secretaries of these organizations, and other applicants will be given the specific information desired by the British Iron & Steel Corp.

## Wisconsin Foundrymen To Hear Address by Dies

*Milwaukee*

••• Cong. Martin Dies, chairman of the congressional committee investigating un-American activities, is scheduled to be one of the speakers at the 4th annual regional conference to be held Feb. 21 and 22 at the Schroeder Hotel, Milwaukee, by the Wisconsin chapter, American Foundrymen's Association.



## Congress Approves Building 600 Ships

Washington

••• Large quantities of steel, including light armor tonnage, together with expansion of shipyard and navy ordnance facilities, are called for under two bills passed by both the House and the Senate authorizing Navy expenditures of \$1,209,000,000, while a third bill passed by the House provides for 200 7500-ton steel cargo vessels, requiring about 600,000 tons of steel.

The cargo ships are to be built within the next two years at an approximated total cost of \$350,000,000. The bill appropriated \$313,500,000, while \$500,000 was made available to the Maritime Commission in cash from emergency funds of the President, and the commission was authorized to make contractual obligations for \$36,000,000 out of the emergency contract authority at the disposal of the President.

One Navy bill carried \$300,000,000 for modern anti-aircraft defense for the fleet. The other authorized \$909,000,000 for expanded shipyards, doubling the ordnance facilities and providing for 400 new ships of various sizes.

The improvements to be undertaken in the anti-aircraft defenses for the fleet, it was explained by Chairman Vinson of the House Committee on Naval Affairs, result from information received in the developments in the European War and by experience obtained during the maneuvers and war problems carried by the American fleet. Of the sum authorized in the anti-aircraft defense bill, approximately \$160,000,000 will be used by the bureau of ships for the purpose of installing gun foundations, installing light armor for splinter protection, installing blisters and for numerous items related to the proposed changes on 58 vessels, consisting of 15 battleships, six aircraft carriers, 18 heavy cruisers and 19 light cruisers.

The remaining \$140,000,000 will be used by the Bureau of Ordnance for acquisition of guns and their installation, for fire control instruments, purchase of ammunition, additional and improved

types of guns and other ordnance materials. As much as possible of the work will be done at the Navy yards, the major portion of it to be accomplished during the fiscal years 1942 and 1943.

The \$909,000,000 bill provides: \$400,000,000 for 400 small craft.

\$315,000,000 for expanding navy and private shipyards.

\$194,000,000 for doubling navy ordnance manufacturing facilities.

The Navy contemplates starting construction of 280 of the small craft as soon as possible. This program consists of 66 submarine chasers, 24 motor torpedo boats, and 190 minesweepers of different types and sizes. The total cost of the 280 vessels, including armament and equipment, is estimated at \$310,460,000, of which \$272,960,000 will be for hulls and machinery and \$37,500,000 for armament and equipment. The exact types which the remaining 120 craft should be have not yet been specifically determined, but, according to the committee, it is thought they will be additional submarine chasers, fleet tugs and salvage vessels.

The \$315,000,000 bill includes \$40,000,000 for expanding private yards, \$25,000,000 for machine tools and \$25,000,000 for machinery.

The contracts for expansion of shipbuilding facilities are of three types. Under the first the Navy will expand its own facilities; under the second private contractors will amortize costs over a period of five years, after which the Navy will take title, and under the third the Navy will advance the private contractor 60 per cent of the cost, the title to be determined after the five-year period.

Supplemental defense funds are to be asked by the President, it has been stated, \$500,000,000 for the Navy and \$600,000,000 for the Army. The Navy funds will cover expenditures to July 1 in connection with the expansion program. The Army funds will be asked for the purchase of equipment, cantonment and airfield construction.

The 200 cargo ships are to be built at new facilities to be especially constructed for the purpose in Portland, Ore.; Los Angeles, New Orleans, Houston, Tex.; Mobile, Ala.; Wilmington, N. C., and Baltimore.

## War Contracts in Canada \$1.1 Billion

Ottawa

••• War purchasing and plant enlargement contracts placed by the Department of Munitions and Supply on behalf of Canada and Great Britain to the end of 1940 totaled \$1,105,839,939. The total does not include certain contracts yet to be placed under the plant extension program. Of the above total, contracts valued at \$671,558,791 were placed on Canadian account and included plant extensions. Contracts placed by the civil aviation division for airport construction under the British Commonwealth Air Training Plan totaled \$17,947,938.

Contracts placed on United Kingdom account totaled \$263,038,792. This figure does not include contracts valued at \$154,187,418 placed on British account under the plant extension program, together with the output of some of these plants.

Total number of contracts awarded was 73,899, with an average value of \$9,100. "The revised figures of capital commitments by the British and Canadian governments for the construction or extension of plants and for plant equipment, which will all be owned, now total \$307,118,674," officials state. About 25 per cent of this sum is for British account and 30 per cent Canadian account, while the remainder is for the joint account of Canada and Britain.

During 1940 a steadily increasing number of contracts was awarded, rising from 1,912 contracts a month in the first quarter to 8,844 in the fourth quarter. A monthly tabulation of contracts showed a rise to \$120,693,084 in October, 1940, the peak month, compared with \$4,498,048 spent in August, 1939, just before war broke out. In the plant extension program, armaments took 35 per cent of the total spent, while chemicals and explosives accounted for 34 per cent. A total of 158 firms were affected in this program.

Production of heavy land artillery and naval guns, for which an elaborate program was announced



a few weeks ago, will involve capital expenditure of close to \$16,000,000 for plant equipment, officials of Department of Munitions and Supply announced. This financing will be carried out by Canada on the account of the United Kingdom government. Orders placed for heavy guns to be manufactured in Canada now approximate \$100,000,000. Plants in Eastern and Western Canada are involved in the big gun program, which aims at production of virtually all calibers. British ordnance experts are assisting in the production work.

Department of Munitions and Supply now is placing war orders at a rate of \$3,000,000 per day, according to officials of the Department. The awards cover both Canadian and British orders. C. D. Howe, Minister of the Department of Munitions and Supply, has been in England for more than a month investigating British industry and the needs of the British Government for the carrying on of the Empire's war effort. The return of Mr. Howe from overseas, it is stated in official circles, will be followed by consultations with Canadian manufacturers with the object of greatly increasing those lines of production most necessary to the carrying on of war. Great Britain, officials state, is more urgently in need of munitions, guns and equipment than men.

On behalf of the British Government, contracts have been placed by the Department of Munitions and Supply for 18 merchant vessels with Canadian shipbuilders at a cost of approximately \$30,000,000. Orders for six ships each have been placed with Canadian Vickers, Ltd., Montreal; Davie Shipbuilding & Repairs Co., Ltd., Levis, Que., and Burrard Dry Dock Co., Ltd., Vancouver, B. C. It is stated that contracts will be completed in about two years. The ships to be built have dead weight capacity of 9300 tons and will be 416 feet in length, 56 feet beam and draw 25 feet of water. They will be powered by reciprocating engines and Scotch marine boilers which will be manufactured in Canada.

For the British Government an order has been placed with Canadian Associated Aircraft, Ltd., for 80 Hampden bombers on a cost-plus basis, involving cost of

about \$10,000,000. This is the second order for Hampden bombers received by the company, the first of which now is nearing completion. Parts for the big bombers will be made at the various plants of the companies which control Canadian Associated Aircraft, Ltd., and assembly of the machines will be carried out at the assembly plants at Malton, Ont., and just outside Montreal in Quebec. Engines for the bombers will be supplied by the British Government.

Major Malcolm P. Jolley has been appointed general manager of the government-owned company, Small Arms, Ltd., at Long Branch, Ont., and George S. Braden, who has been president and general manager of the company since its inception, will retain the position as president. The company now is tooling for the production of Lee Enfield rifles. Major Jolley is an expert on small arms.

For the two weeks ended Jan. 18, war orders placed with Canadian companies on behalf of the Canadian and British governments had total value of approximately \$45,500,000. Of the above total, \$40,000,000 was placed on British account for commercial ships and big bombing planes. In addition, orders were placed with United States firms to the value of \$160,488.

Equipment orders placed by the Department of Munitions and Supply for the week ending Jan. 10, include:

Ordnance — Dominion Rubber Co., Ltd., Kitchener, \$109,296; Kelsey Wheel Co., Ltd., Windsor, \$39,139.

Machinery — E. W. Bliss Co. of Canada, Ltd., Toronto, \$37,748.

Aircraft — Fairchild Aircraft, Ltd., Longueuil, Que., \$195,000; McIntyre Porcupine Mines, Ltd., Toronto, \$58,830; Bickle-Seagrave, Ltd., Woodstock, \$63,000.

Motor transport — Ford Motor Co. of Canada, Ltd., Windsor, \$45,456.

Instruments (technical) — Dominion Electric Protection Co., Montreal, \$133,987; Ontario Hughes-Owens Co., Ltd., Ottawa, \$55,583.

Shipbuilding — George T. Davis & Sons, Ltd., Lauzon, Levis, Que., \$46,598; Morton Engineering & Dry Dock Co., Ltd., Quebec, \$31,512.

## Foundry Survey Lists Shortages of Labor

Cleveland

• • • A survey of 28 states by the Gray Iron Founders' Society, Inc., with headquarters here, shows that labor shortages in the foundry industry center principally around molders and coremakers. Each of the 28 states has a shortage in at least one of the 29 classifications studied, according to W. W. Rose, executive vice president of the society.

Foundries in 26 states reported scarcity of floor molders, while in 20 states shortages of bench molders were noted. Fifteen states showed squeezer molders unavailable. Bench coremakers were needed in 14 states, and floor coremakers in 12 states.

Wisconsin led the list with shortages in 15 classifications; Northern Ohio was next with 12; California reported 11, while Massachusetts, Illinois and Indiana each showed shortages in 9 classes.

Only a lack of apprentices was reported by Tennessee. Only floor molders were lacking in Missouri and Oklahoma.

The report, covering 697 foundries, or approximately 25 per cent of the entire gray iron foundry industry, including captive shops, shows that employment gained approximately 10.9 per cent in the fall of 1940 compared with the same part of 1939.

The average hourly wage rate for 65,470 employees was 0.751c. Foremen in patternmaking departments were averaging \$1.123 per hour, and molder foremen were being paid an average of \$1.079 per hour. Loam or pit molders pouring iron were averaging 0.921c., identical with the average of male floor coremakers.

## Bath Iron Works to Expand Shipyards

• • • Maine Central Railroad directors have approved the sale of approximately four acres of the present freight yard at Bath, Me., to the Bath Iron Works, Inc., to be used for two additional shipbuilding berths.



## Henderson Opposes Secondary Zinc Rise

Washington

• • • Price boost in secondary zinc and zinc scrap drew the ire of Defense Commissioner Leon Henderson, head of the Price Stabilization Division, last week. Mr. Henderson issued a statement following a meeting Thursday of representatives of the producers of secondary zinc and the Price Stabilization Division, saying that although the price of primary zinc has remained at 7.25c per pound, East St. Louis, Ill., for the past four months, some producers of secondary zinc have recently been charging premiums above the price. At the same time, Mr. Henderson said, the price of zinc scrap, source of the secondary zinc, has jumped sharply.

"It is clear that the actual tonnage of metal which has been sold above the base price is very small compared to the total sales of primary and secondary zinc," said Mr. Henderson. "Nevertheless, these sales are undoubtedly an unsettling influence on the market. At the same time, some secondary producers and scrap dealers have contributed to the situation by 'over-reaching'—trying for the highest price obtainable.

"In addition, consumers have been made unduly anxious by exaggerated rumors of shortages and high prices. In this connection, Price Stabilization Division officials point out that additions to the primary zinc smelting capacity of the United States in the first half of this year will amount to about 100,000 tons."

Officers of the National Association of Waste Material Dealers attended the conference and discussed the present situation in the markets for both secondary and scrap zinc and agreed to prepare a report on how the requirements of customers may be adequately met.

Those present at the meeting included Commissioner Henderson, C. A. Bishop and Donald Wallace of the Price Stabilization Division of the N.D.A.C.; Harry Goldstein, president, and Charles Haskins, secretary, of the National Association of Waste Material Dealers;

and 15 representatives of both large and small producers of secondary zinc in the East and Middle West.



Washington

• • • Defense Commissioner Leon Henderson, head of the Commission's Price Stabilization Division, at a meeting of lumber representatives last week said that the commission is considering invocation of the draft industry amendment of the Selective Service Act if there is not an immediate slash in lumber prices and deliveries.

The draft industry amendment permits the Secretary of War or the Secretary of the Navy to name prices for products of industries that are not cooperating in the defense program and unless the prices are agreed to the government can take over and operate the plants. This "cruel and butchering method" of Government price fixing would be suggested, Henderson told the lumber representatives, if the industry itself did not produce results.

M. L. Fleishel, lumber and timber products defense committee chairman, attributed the price rise and delivery delay to disorganized Government purchasing and the wage-hour law. Mr. Fleishel said that the lumber industry had urged a system of centralized bidding procedure and that lower prices paid by the War Department since last October had been largely the result of that system.

## New Car Registrations Up 20,000 in December

Detroit

• • • Reversing the trend indicated by earlier returns from 110 principal cities in the United States, new passenger car registrations for December will show a gain of approximately 20,000 units over the high level reached in November, according to estimates released Monday by R. L. Polk & Co. This will continue the upward trend established in October and November. It will represent increases of 7.59 per cent over November, 1940, and 30.14 per cent over December, 1939. Truck registrations also are up for December.

## Industry Warned of Regulation To Come

Pittsburgh

• • • Urging an "all out" endeavor so that this country shall be armed not too late but "on time," M. V. Clement, president, Pennsylvania Railroad and principle speaker at the Pittsburgh Traffic Club's 40th annual dinner here last week, warned the almost 2000 industrialists present that if the great industries and businesses of this country are to remain privately owned and operated they will have to face constructively the change now taking place in their relationships with the public, their employees, and the people who own them. He summarized this change in one word—regulation.

Sketching the history and some concepts of regulation, Mr. Clement said: "Recently it would seem that the railroads and the commissions are coming nearer to a common understanding as to the proper functioning of regulation, and the closer they get together the nearer will the mandate of the peoples representatives be fulfilled."

Tracing the history of regulation in the transportation field which came about through clashes with the people, "so in time," said Mr. Clement, "is regulation coming to the rest of you in whatever line of endeavor you may be."

Benjamin F. Fairless, president, U. S. Steel Corp., was toastmaster. The dinner was attended by leading railroad and industrial executives.

## Toledo Industrial Employment Gains

Toledo

• • • Industrial employment here has topped the 1940 peak, with 51 plants reporting 22,566 workers, for a net gain of 1887 for the week. Recall of workers in automotive plants after inventories accounted for some of the gain. Plants with large defense orders have been adding to working forces each week. Plants reporting account for about a third of total industrial employment.



## Monarch Announces New Plant Expansion

*Sidney, Ohio*

••• The third addition in 18 months to the Monarch Machine Tool Co. plant, Sidney, Ohio, an expansion that will increase the company's employment on the production of lathes for the defense program another 40 per cent, has been announced by Wendell E. Whipp, president.

The new building will be completed and the major portion of the equipment installed in eight weeks, he said, and in order not to lose a minute's time men are now going into training to be ready to put the equipment into operation as soon as the power is turned on. Employment in the plant will be increased from 1000 to approximately 1400 men, two and a half times that of September, 1939, when the war started in Europe.

"The country needs more machine tools in a shorter period of time than has ever been the case before," Whipp said, "and we are doing our part to make sure that it gets them."

Land and building, a 25,000-sq. ft. one-story structure of saw-tooth design, will cost \$150,000 and new equipment an additional \$500,000. The expansion is being financed under the emergency amortization tax law of 1940.

The plant is now operating 22 out of 24 hr. a day, every day except Sunday, and is subcontracting to outside machine shops "as much work as it is feasible to do," Whipp said. Last year Monarch production was increased 242 per cent over that of 1939, practically the entire output going into the defense programs of the United States and England.

## Sterling Engine Co. To Enlarge its Plant

*Buffalo*

••• Addison F. Vars, president, Sterling Engine Co., announced plans are under way for the construction of additional assembly facilities of 100,000 sq. ft. "This step has become necessary," he said, "because of the steadily increasing demand for national defense and for private marine and industrial use."

## Sheet and Tube Earns \$5.96 A Share In '40

••• Youngstown Sheet & Tube Co. reports net profit for 1940 of \$10,815,468, equal to \$5.96 a common share, compared with \$5,004,484, or \$2.49 per common share, in 1939.

Jones & Laughlin Steel Corp. reports for the quarter ended Dec. 31, 1940, a profit of \$4,044,126 after all charges. This compares with a profit of \$2,907,755 for the quarter ended Dec. 31, 1939. Profit for 1940 was \$10,277,029 compared with a profit of \$3,188,944 reported for 1939.

Bliss & Laughlin, Inc., Harvey, Ill., showed a 1940 profit of \$712,030, after depreciation, federal income taxes and excess profits tax, which was equal to \$2.64 per common share. This compared with 1939 profit of \$672,422 or \$2.49 per share.

Keystone Steel & Wire Co. reported for the three months ended Dec. 31, 1940, net profit of \$288,966 after all charges including provision of \$30,625 excess profits taxes. This was equivalent to 38c. a share on 757,632 shares of capital stock.

American Steel Foundries for the year ended Dec. 31, 1940, reported preliminary net income of \$2,943,534, after all charges including loss of \$110,355 on sale of land. This was equal to \$2.48 a share on the common stock outstanding and compared with \$1,368,514, or \$1.15 a share, in 1939.

United States Pipe & Foundry Co.'s preliminary report for the year ended Dec. 31 showed a profit of \$2,403,804, after federal income and excess profits taxes, equal to \$3.45 a common share. This compares with \$2,570,279, or \$3.69 a share, in the preceding year.



••• Republic Steel Corp. reports net income for the year 1940 of \$21,113,507, after all charges and taxes. This compares with a net income after charges and taxes for 1939 of \$10,671,343.

Net profits after charges and taxes for the fourth quarter total \$8,480,174, compared with \$6,772,693 in the corresponding quarter of 1939.

## Cleveland Tool Co. Plans \$5,000,000 Program

*Cleveland*

••• Cleveland Pneumatic Tool Co., manufacturer of aircraft landing gear and other airplane parts, has announced a \$5,000,000 expansion program. Capacity of the plant already has been trebled during the past year.

L. W. Greve, company president, said that contracts would be signed soon with the Defense Plant Corp., R. F. C. subsidiary. The company now employs about 2000 workers in two shifts daily and will require several thousand more.

The announcement followed on the heels of the decision of the General Motors Corp. to build bomber parts and sub-assemblies in its local Fisher Body plant, announcement of a \$5,000,000 airplane crankshaft factory which the Ohio Crankshaft Co. will operate, and plans for \$15,000,000 parts factory in Euclid by the Thompson Aircraft Products Co., new subsidiary of Thompson Products, Inc., maker of aircraft valves and other airplane parts.

## Coke Scarcity Slows Up German Iron, Steel Output

*London*

••• Despite the most rigid economy Germany's supply of industrial coke for smelting iron ore is admitted by Dern Deutsch Volkswirt, the leading German economic organ, to be substantially below current requirements, implying a limitation of output in the German iron and steel trades.

The chief cause of the coke scarcity is the great increase in the quantity required for smelting since the vast new Hermann Goering iron and steel trust, the largest enterprise of its kind in Germany, commenced operations.

## Page Fence Association Holds Convention

••• Page Fence Association held its annual convention in Omaha, Neb., at the Hotel Fontenelle, Jan. 28-30. W. C. Sprau, of the Barnes Wire Fence Co., Detroit, Mich., is president.



## Murray Urges Steel Be Run For Defense Like One Big Company

••• Organization of the steel industry into one great production unit coordinated by an Industrial Council including representatives of government, management and the SWOC appointed by the President, was advocated this week by Philip Murray, CIO-SWOC head.

Such unification, Murray said, is necessary for the success of the defense program. Steel production, he said, is falling considerably below the tonnage that can be produced by the proper coordination of existing melting and finishing facilities.

"The disorganized state of the industry, growing out of the inefficient, individual order, and cross purpose state of affairs existing among separate companies, prevents the full use of the existing steel facilities as well as the execution of an effective expansion program," Murray said.

The SWOC's plan to end the "inefficient, individual order" in the steel industry includes a summary of idle steel capacity much of which, it says, cannot be used as long as the steel industry "continues its present wasteful and inefficient operating practices." The SWOC summary follows:

	Tons
Idle bessemer steel capacity .....	1,965,800
Bessemer capacity available through Flame-Control process .....	1,000,000
Idle open hearth and finishing facilities .....	2,454,395
Idle concrete reinforcing bar capacity in terms of new billet steel that could be released....	500,000
Total .....	5,930,195

The SWOC plan proposes, Murray said, to assure the country an adequate supply of iron and steel for civilian and military needs through (1) the most efficient coordination and use of present steel producing facilities and (2) through a well-reasoned, responsible program to expand steel melting and finishing capacities where necessary.

"Defense machinery now existing in the nation's capital is in-

capable of achieving this vital industry-wide coordination," Mr. Murray declared in his 16-page statement. "All existing machinery is organized on a horizontally specialized basis in contrast to the vertical, industry basis so necessary at present. A separate division exists for each special field such as production, raw material, labor, etc. Each division extends into all industries, divides each industry into separate segments, and prevents industry-wide coordination and integration, the SWOC report said.

The SWOC says it finds statements of both government and steel industry spokesmen "unconvincing" as to the need for a large-scale steel capacity expansion. "Frankly," said Murray, "we do not know. The heat should be taken out of the controversy. Management, organized labor and government representatives should get together and ascertain the truth of the situation."

Murray describes the method by which government steel armament contracts have been distributed as "helter skelter." Much of the demand for increased ingot or finishing capacity is evidence of maldistribution of orders, he said. "This shortage is a company shortage, not a national inadequacy."

"Wildcat and irresponsible steel expansion plans announced by certain steel firms are misleading, and will not accomplish the necessary (defense) results on time, if at all," Murray said. "Much of the expansion proposed by various companies in an uncoordinated manner will lead to a vicious cycle of further expansion in further facilities, unplanned and unnecessary."

"Steel defense contracts probably will have to be re-allocated to fit the special capabilities of each steel firm and its respective mills, and to provide for greater specialization in production."

"Failure to achieve this maximum efficiency will result in the tragically ironical situation of priorities being enforced for the defense program while considerable

portions of the steel industry's facilities lay idle."

The SWOC leader said one "principal source of productive inefficiency in the steel industry is mill changes. Valuable production hours are lost daily because individual mills have to cease production during mill changes. They are caused by the varied demands of customers. A comprehensive survey has revealed that a large increase in steel output can be achieved through more efficient scheduling as well as allocating of steel orders. A "top scheduling clerk" for the entire steel industry is visualized in the union's plan.

Mr. Murray said also that funds should be made available to determine usability of cast armor plate for certain armanent projects, that expansion of electric steel producing facilities should not be confined, as at present, to large companies, and that small companies should be supplied with capacity business.

### AFL Calls "Strike" on Gun Forging Structure

Pittsburgh

••• An intensive organizing campaign among plant workers at the Mesta Machine Co. near here is to be launched, according to SWOC officials. Last week AFL construction workers called a "strike" on building work involving a Navy gun forging structure at the company's plant. Subsequent investigation, however, by THE IRON AGE, disclosed that the work being done by the AFL craft unions was substantially completed at the time the so-called strike was called.

### SWOC Stages Sitdown At Bethlehem Plant

••• Approximately 350 employees in Bethlehem Steel Co.'s billet yard, bridge shops and tool steel department at the Bethlehem, Pa., plant staged a sitdown strike on Jan. 24. The union claimed the sitdown was a demonstration against certain grievances. Van A. Bittner, SWOC official, told union members: "Stop as often as you want for as long as you want, but we don't want any general strike in these plants."

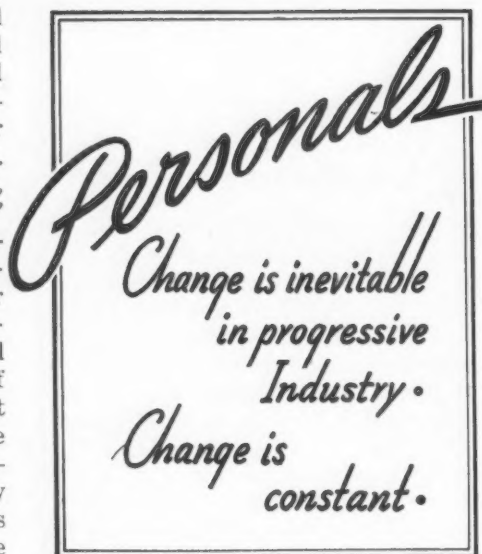


• **T. L. McCall** has been appointed general manager of Dominion Coal & Cumberland Railway & Coal Co., and he also retains his position as chief mining engineer for Dominion Steel & Coal Corp. **C. M. Anson** is named to the steel post, giving him "special jurisdiction" over the Sydney plant, Newfoundland iron ore mines, and the following subsidiaries: James Pender & Co., St. John, N. B.; Peck Rolling mills, Security Fence Co., and St. Lawrence Wire Co., all of Montreal. Mr. Anson is assistant to the general manager. Up to the beginning of the year general manager **H. J. Kelley** was technically head of these operations. Officials stated the appointments were made to free him of various responsibilities and enable him to devote more effort to the war cause.

• **J. J. Curtin**, for the past 11 years in charge of sales promotion and publicity work in the motor division of the industrial department, General Electric Co., Schenectady, has been transferred to the wire and cable division of the central station department at Fort Wayne, Ind. He will be in charge of magnet wire sales, replacing **B. F. Ilsley**, who has been transferred to Schenectady to be general assistant to **M. V. O'Brien**, division manager of wire and cable. **O. F. Veas** has taken over the work formerly handled by Mr. Curtin.

• **P. A. McTerney** has been appointed manager of sales, large motor and generator division of G-E's industrial department. **G. L. Irvine** has been appointed manager of apparatus agency sales, a new section added to the industrial department. The new section is responsible for the distribution of apparatus through G-E distributors, dealers and agents. **G. E. Cassidy** has been made engineer of the general applications section, a new division of the industrial engineering department which is responsible for such applications as central station auxiliary drives, dynamometers and engine testing equipment, reciprocating and centrifugal compressors. **J. S. Overstreet** has been placed in charge of wire and cable sales, G-E wire and cable division, Schenectady.

• **Stanley I. Vaughn**, manager of the experimental shop for the Curtiss Aeroplane division of Cur-



tiss-Wright Corp., Buffalo, N. Y., has been appointed factory manager of that organization's aircraft plant now under construction at Columbus, Ohio, and **G. B. Clark**, of the sales-engineering staff, has been named sales representative of the new factory.

• **Eugene Phillips**, for the past few years sales manager of the Puritan Co., Waterbury, Conn., has been added to the staff of the Packer Machine Co., Meriden, Conn., as a sales and service engineer.

• **James M. White** has been appointed assistant to **William Watson**, vice-president of the Allis-Chalmers Mfg. Co., Milwaukee, in charge of manufacturing. Mr. White has been assistant to **Charles J. Hood**, manager of the firm's LaPorte, Ind., works who is retiring after 50 years of service. **John G. Finch**, former assistant to Mr. White, takes Mr. Hood's place.

• **E. K. Lucas**, former advertising and sales manager of the National Enameling & Stamping Co., Milwaukee, has been appointed sales manager of the Leyse Aluminum Co., Kewaunee, Wis.

• **Edward Brinkman**, Line Material Co.; **Harry Torrence**, Chain Belt Co., and **Reginald Hislop**, A. O. Smith Corp., conducted a panel discussion on "Tooling Procedure" at a recent dinner meeting of the Milwaukee chapter of the Society for the Advancement of Management.

• **John Johnson**, superintendent of construction for the Milwaukee office of the Grinnell Co., is retir-

ing after 38 years with the company.

• **James H. Lansing**, foundry engineer with the Malleable Founders Society, Cleveland, spoke on "New Uses for Castings" before the recent dinner meeting of the Wisconsin chapter, American Foundrymen's Association, in the Schroeder Hotel, Milwaukee.

• **F. H. Frankland**, chief engineer and technical director of American Institute of Steel Construction, has been made director of engineering and will devote his entire time to technical research related to the design and use of structural steel and to other matters of engineering economics with which the institute is concerned. **T. R. Higgins**, who has been in charge of the institute's New York metropolitan office for the past year, will become chief engineer and will supervise and manage the operations of the institute's district offices now located at Worcester, Philadelphia, New Orleans, Atlanta, St. Louis, San Francisco, Cleveland, Chicago, and Topeka.

Mr. Frankland has been with the American Institute of Steel Construction since 1928. He was born in New Zealand and educated in England and the United States. His engineering experience of over 30 years has been devoted to the design and construction of highway and railway bridges, skyscrapers, industrial plants and airport structures in the United States and in many foreign countries.

Mr. Higgins was chief engineer for New England Structural Co. for eight years prior to his joining the staff of the institute just a year ago. For six years prior to that he was with Stone & Webster Engineering Corp. Mr. Higgins graduated from Tufts College in 1922, following which he was in the bridge division of Massachusetts State Highway Department and later connected with the Chief Engineer's Office of the Santa Fé Railroad in Texas.

• **Hall L. Hibbard**, vice-president and chief engineer of the Lockheed Aircraft Corp., has been elected vice-president of the Institute of Aeronautical Sciences. **Frank Caldwell**, of United Air Lines, was elected president.





**GEORGE N. JEPSON**, president,  
Norton Co.

• **M. C. Bellamy**, sales engineer of the Seattle office of the Timken Roller Bearing Co. since 1934, has been made district manager of industrial bearing and steel sales for the Seattle territory. He was graduated from Purdue University and spent several years in other industrial capacities before joining the Timken Roller Bearing Co. in 1928. After working in the plant and engineering department for two years, he was appointed sales engineer in 1930.

• **Oliver E. Mount**, vice-president of American Steel Foundries, Chicago, has been elected vice-president of the Steel Founders' Society of America.

• **J. K. Bybee**, formerly of the Indianapolis office of Ampco Metal, Inc., Milwaukee, has been placed in charge of the company's Detroit office. **E. A. Svoboda**, heretofore of the Chicago office, has been transferred to Indianapolis. **W. B. McKenzie**, recently of the Buffalo office, has been promoted to the Chicago office, while **A. J. Reynolds**, previously an Ampco engineer at Boston, has been transferred also to Chicago. **H. R. Gordon** has taken over the Boston territory, and **Frank P. Gey** has joined the company, with headquarters in Pittsburgh.

• **George N. Jeppson**, heretofore vice-president of the Norton Co.,

Worcester, Mass., has been elected president, succeeding **Aldus C. Higgins**, who has been made chairman of the board.

Mr. Jeppson entered the employ of the Norton Co. in 1892 and became successively assistant superintendent and works manager before being made a director in 1906. He was elected secretary in 1919 and treasurer in 1933. He has been a vice-president for several years.

Mr. Higgins became identified with the company in 1900 and managed the abrasive plants before he was elected secretary in 1912. He was made treasurer and general counsel in 1919 and has been president since 1933.

**Henry Duckworth**, who has been assistant treasurer of the Norton Co., has relinquished that post to become vice-president. He is being succeeded as assistant treasurer by **Milton P. Higgins**, previously assistant manager of research and abrasive plants.

• **L. A. Mullen** has been made manager of sales of tubular products, Pittsburgh Steel Co., Pittsburgh. Mr. Mullen has been with Pittsburgh Steel since 1938, having served as assistant district sales manager at New York, district sales manager at Chicago, and for the past year assistant manager of sales in Pittsburgh.



**L. A. MULLEN**, manager of sales,  
tubular products, Pittsburgh  
Steel Co.



**ALDUS C. HIGGINS**, chairman of  
the board, Norton Co.

He formerly was connected with Republic Steel Corp.

• **D. Hewitt Wood** was given a dinner on Jan. 4 in Chattanooga, Tenn., in honor of his completion of 45 years of service with the Converse Bridge Co., as chief engineer, president and chairman.

• **Henry S. Evans** has been elected president and chief executive officer of Central Iron & Steel Co., **Vance C. McCormick** continues as chairman of the board. **Basil M. Graham** has been elected vice-president, continuing as secretary and treasurer.

• **George W. Frick** has been appointed manager of the Firthite division, Firth-Sterling Steel Co., McKeesport, Pa. He formerly was manager of the company's Ohio district and in his new position will be in charge of sales of sintered carbide cutting materials. **Henry P. Jeager** will succeed Mr. Frick as manager of the Ohio district.

• **Robert M. Gaylord**, president of the Ingersoll Milling Machine Co., Rockford, and president of the Illinois Manufacturers' Association, has been appointed assistant to the state adviser on occupational deferment under the Selective Service Act.

• **T. M. Girdler**, board chairman, Republic Steel Corp., Cleveland,



will be principal speaker at the 57th annual banquet of the Engineers' Society of Western Pennsylvania to be held at the William Penn Hotel, Pittsburgh, Feb. 3. **A. W. Page**, vice-president, American Telephone & Telegraph Co., New York, will also address the society. This annual dinner is attended by leading industrialists and executives from all parts of the country.

• **R. L. Sullivan**, formerly assistant general manager of sales, general line, of the American Can Co., New York, has been appointed assistant vice-president. **W. C. Stolk**, formerly Atlantic district sales manager, general line, has been made general manager of that division. **H. B. Tourtellot**, who has been assistant to the general manager of sales, general line, has become assistant general manager of sales of that line. **E. Hoffman**, formerly assistant district sales manager, general line, has been made district sales manager, with headquarters in New York.

• **Jay J. Seaver** has become associated with Day & Zimmerman, Inc., Philadelphia. He was formerly vice-president of H. A. Brassert & Co., Pittsburgh, and before that of Arthur G. McKee & Co., Cleveland. He received his degree in mechanical engineering from the University of Mich.

• **F. L. Toy**, since 1937 assistant general superintendent in charge of industrial relations at the Homestead works of Carnegie-Illinois Steel Corp., Pittsburgh, has been appointed assistant to the manager of technical development, with headquarters in Pittsburgh. He has been identified with the company since his graduation from Lehigh University in 1909, when he joined the Homestead works as metallurgist. He continued in that capacity until 1920 when he was made superintendent of the open hearth department and from 1933 to 1937 acted as management's representative in charge of all industrial relations at the Homestead works.

• **H. N. Middleton**, who has been associated in a sales capacity with the B. F. Sturtevant Co. for many years, has been appointed engineering consultant for the Eastern division of the company, with headquarters in Camden, N. J.

**Thomas B. Collins** has been made Washington representative of the Porcelain Enamel Institute. He was formerly Western sales manager of the Alliance Porcelain Products Co. and previously connected with the Kohler Co. and with Pierce Butler & Pierce. He is a construction engineer, a graduate of Massachusetts Institute of Technology, and is well acquainted with the many problems of adapting porcelain enamel to the needs of government departments, especially defense housing.

• **Charles A. Simmons, Sr.**, president of the Simmons Machine Tool Corp., Albany, N. Y., has been appointed a member of the National Defense Advisory Commission. Mr. Simmons, who is already at his work in the nation's capital, will spend five days a week in Washington. He will be attached to the machine tools and heavy Ordnance section of the defense commission. Because of his 30 years of leadership in used and rebuilt machinery, Mr. Simmons was selected to represent that phase of the machine tool industry in the commission's work.

• **Louis S. Taylor**, vice-president in charge of finance and accounting of Pullman, Inc., has been promoted to executive vice-president. He will continue in charge of the same departments. **Champ Carry**, vice-president of the Pullman Co., operating subsidiary, was promoted to executive vice-president. He will also continue his former duties.

• **Norbert T. Jacobs**, formerly Chicago district manager of the Wood Shovel & Tool Co., Piqua, Ohio, has been appointed manager of sales, succeeding C. L. Butts, who has retired. Formerly Mr. Jacobs was vice-president in charge of sales for the Ames Shovel & Tool Co.

• **Grover M. Hermann, Jr.**, son of the chairman of the board and president of American-Marietta Co., Chicago, has been elected a director. **C. S. Beaver**, general manager of the company's operations at Marietta, Ohio, and High Point, N. C., and **Muir Rogers**, manager of the Mid-western industrial finishes division of the company, were elected vice-presidents.

## Obituary

• **George A. Macklem**, vice-president of the Beloit Iron Works, Beloit, Wis., died Jan. 9, in Miami, Fla., at the age of 77. He had been associated with the firm for 34 years.

• **Percy M. Brotherhood, Jr.**, formerly of Percy M. Brotherhood & Son, handling domestic sales of J. M. Lucas & Co., Inc., Bridgeport, died on Jan. 15, after a short illness.

• **Frederick A. Bigelow**, president of the Carpenter Steel Co. for 21 years, died at his home Jan. 24 after a short illness at the age of 76. A graduate of the Worcester Polytechnic Institute, Mr. Bigelow joined the company in 1904 as a New England district salesman. He became general sales manager in 1915, vice-president in 1916 and president in 1920.

• **Norman R. McLure**, for 20 years vice-president of E. J. Lavino & Co., Philadelphia, died in that city Jan. 21 aged 61 years. Both here and abroad he was noted for his association with raw materials used by the steel industry. He was graduated from Princeton University in 1904 and was a member of the American Iron and Steel Institute.

• **George Stevens Page**, former general manager of Park works of Crucible Steel Co., died Jan. 19, aged 76 years. Mr. Page went to Pittsburgh from New York in 1886 and joined the Black Diamond Steel works which later became affiliated with the Crucible firm. He retired in 1923.

• **George R. Lamb**, who retired one year ago as district manager at Cleveland for the Waterbury Farrel Foundry & Machine Co., Waterbury, Conn., died Jan. 19, in Thomasville, Ga., aged 65 years.

• **Gordon H. Stewart**, vice-president and general manager of the American Twist Drill Co., died recently in Henry Ford Hospital after an illness of six months. Mr. Stewart was born in 1892 in Chicago and was associated with tool companies in Athol, Mass., and Chicago before going to Detroit in 1926.



## U. S. Steel Profits

### Top 102 Millions

• • • U. S. Steel Corp. and its subsidiaries report for the year ended Dec. 31, 1940, a net profit of \$102,181,321, after all charges, compared with a profit of \$41,119,934 in 1939. Fourth quarter earnings totaled \$32,763,251, against earnings of \$28,729,178 in the corresponding 1939 period.

Fourth quarter operations for U. S. Steel Corp. subsidiary plants averaged 93.3 per cent, against 84.3 per cent in the like period of 1939 while output for 1940 averaged 77.3 per cent compared with 59.3 per cent in the previous year. Irving S. Olds, U. S. Steel chairman, said.

Capital outlay for 1940 was \$64,600,000 and employees for the fourth quarter averaged 272,087 against 257,783 in the corresponding 1939 period. The corporation has no plans now for expanding its ingot or shipbuilding capacity. Exports for 1940 totaled 15 per cent (in dollar value) of total sales, Mr. Olds said, while direct government orders totaled 5 per cent. U. S. Steel's backlog is about equal to three months' shipments.

U. S. Steel taxes for the fourth quarter of 1940 totaled \$22,548,133, against \$21,716,485 in the similar 1939 period, while taxes for all of 1940 totaled \$85,294,204 compared with \$67,017,086 in 1939.

Mr. Olds said that no request has been made by the SWOC for a change in the union contract. He said he knew of no bottleneck necessitating steel priorities now. Quarterly common dividend of \$1 declared by U. S. Steel directors is payable March 20 to shares of record Feb. 20, and the \$1.75 preferred dividend is payable Feb. 20 to stock of record Feb. 3.

### Union Switch Gets

### \$1,232,000 Navy Contract

Washington

• • • The Navy Department announced that it had entered into a contract with Union Switch & Signal Co., Swissvale, Pa., for the acquisition, construction and installation of additional plant facilities consisting of machines, equipment and tools at a total estimated cost of \$1,232,000.



Left to right: FRANK L. DUGAN, president, Pittsburgh Chamber of Commerce; PHILIP MURRAY, SWOC chairman; W. P. WITHEROW, chairman, Blaw-Knox Co.

## Witherow, Murray

### Discuss U. S. Defense

Pittsburgh

• • • The perpetuation of American liberties is at stake and industry is facing its responsibilities with earnestness and determination, William P. Witherow, president, Blaw-Knox Co., and toastmaster of a "Manning Industry for National Defense Conference," told 600 personnel and industrial relations leaders here last week.

Philip Murray, CIO head and one of the principal speakers on the luncheon program, explained labor's plan which was submitted to the Government. He pleaded for industrial, labor and Government organizations which would

bring Americans closer together. "In my calm considered judgment, industry and labor are more apt to effectuate speedy settlement of disturbances through this plan than through conciliation," Mr. Murray said.

Brigadier General Rutherford, director of planning branch, office of the Assistant Secretary of War, laid emphasis on the need of trained workmen. "Shortages already exist in some of the skilled categories and the production program for which contracts have already been let is just starting," he said. "It appears certain that an additional burden of production beyond any that has yet been formulated will be placed if the emergency develops as it threatens," he added. General Rutherford said that industry knows how to meet this situation, and future requirements should be anticipated.

## Second Steel Wage Meeting On Jan. 31

Pittsburgh

• • • Attention in the steel industry this week will be focused on the outcome of the second meeting to be held Friday, Jan. 31, between Philip Murray, CIO president and SWOC head, and William Beye, vice-president, U. S. Steel Corp. of Delaware, when the question of wages, check-off, and grievance settlements will be further "explored." Further negotiations between the SWOC and Crucible Steel Co. of America and Jones & Laughlin Steel Corp. have been put off pending the outcome of the SWOC-corporation meetings.

## Hudson Will Build Naval Ordnance Plant

• • • An inquiry for 6500 tons of fabricated structural steel has appeared this week for the naval ordnance plant to be built and operated by the Hudson Motor Car Co., Detroit. No announcement regarding this project has been given out by the Navy Department, but it is understood the contract calls for an expenditure of \$13,000,000. The plant will be erected near the Chrysler tank plant in northeast Detroit and will consist of 400,000 sq. ft. of floor space. It will produce guns, torpedoes and other ordnance items.



# The Iron Age Comparison of Prices

Advances Over Past Week in Heavy Type; Declines in Italics

	Jan. 28, 1941	Jan. 21, 1941	Dec. 30, 1940	Jan. 30, 1940
<b>Flat Rolled Steel:</b>				
(Cents Per Lb.)				
Hot rolled sheets.....	2.10	2.10	2.10	2.10
Cold rolled sheets.....	3.05	3.05	3.05	3.05
Galvanized sheets (24 ga.)	3.50	3.50	3.50	3.50
Hot rolled strip.....	2.10	2.10	2.10	2.10
Cold rolled strip.....	2.80	2.80	2.80	2.80
Plates.....	2.10	2.10	2.10	2.10
<b>Tin and Terne Plate:</b>				
(Dollars Per Base Box)				
Tin plate.....	\$5.00	\$5.00	\$5.00	\$5.00
Manufacturing ternes.....	4.30	4.30	4.30	4.30
<b>Bars and Shapes:</b>				
(Cents Per Lb.)				
Merchant bars.....	2.15	2.15	2.15	2.15
Cold finished bars.....	2.65	2.65	2.65	2.65
Alloy bars.....	2.70	2.70	2.70	2.70
Structural shapes.....	2.10	2.10	2.10	2.10
<b>Wire and Wire Products:</b>				
(Cents Per Lb.)				
Plain wire.....	2.60	2.60	2.60	2.60
Wire nails.....	2.55	2.55	2.55	2.55
<b>Rails:</b>				
(Dollars Per Gross Ton)				
Heavy rails.....	\$40.00	\$40.00	\$40.00	\$40.00
Light rails.....	40.00	40.00	40.00	40.00
<b>Semi-Finished Steel:</b>				
(Dollars Per Gross Ton)				
Rerolling billets.....	\$34.00	\$34.00	\$34.00	\$34.00
Sheet bars.....	34.00	34.00	34.00	34.00
Slabs.....	34.00	34.00	34.00	34.00
Forging billets.....	40.00	40.00	40.00	40.00
<b>Wire Rods and Skelp:</b>				
(Cents Per Lb.)				
Wire rods.....	2.00	2.00	2.00	2.00
Skelp (grv'd.).....	1.90	1.90	1.90	1.90

	Jan. 28, 1941	Jan. 21, 1941	Dec. 30, 1940	Jan. 30, 1940
<b>Pig Iron:</b>				
(Per Gross Ton)				
No. 2 fdy., Philadelphia.....	\$25.84	\$25.84	\$25.84	\$24.84
No. 2, Valley furnace.....	24.00	24.00	24.00	23.00
No. 2, Southern Cin'ti.....	24.06	24.06	23.06	23.06
No. 2, Birmingham.....	19.38	19.38	19.38	19.38
No. 2, foundry, Chicago†.....	24.00	24.00	24.00	23.00
Basic, del'd eastern Pa.....	25.34	25.34	25.34	24.34
Basic, Valley furnace.....	23.50	23.50	23.50	22.50
Malleable, Chicago†.....	24.00	24.00	24.00	23.00
Malleable, Valley.....	24.00	24.00	24.00	23.00
L. S. charcoal, Chicago.....	30.34	30.34	30.34	30.34
Ferromanganese‡.....	120.00	120.00	120.00	100.00

†The switching charge for delivery to foundries in the Chicago district is 60c. per ton. ‡For carlots at seaboard.

<b>Scrap:</b>				
(Per Gross Ton)				
Heavy melt'g steel, P'gh.....	\$21.50	\$21.50	\$23.50	\$18.25
Heavy melt'g steel, Phila.....	20.00	20.00	21.25	17.50
Heavy melt'g steel, Ch'go.....	19.75	19.75	20.75	16.25
Carwheels, Chicago.....	20.75	20.75	21.75	16.75
Carwheels, Philadelphia.....	23.00	23.00	23.25	20.25
No. 1 cast, Pittsburgh.....	22.25	22.00	22.75	18.75
No. 1 cast, Philadelphia.....	23.75	23.75	23.75	20.25
No. 1 cast, Ch'go (net ton).....	18.75	18.75	19.25	14.25

<b>Coke, Connellsville:</b>				
(Per Net Ton at Oven)				
Furnace coke prompt.....	\$5.50	\$5.50	\$5.50	\$4.00
Foundry coke, prompt.....	5.75	5.75	5.75	5.50

<b>Non-Ferrous Metals:</b>				
(Cents per Lb. to Large Buyers)				
Copper, electro., Conn.*.....	12.00	12.00	12.00	11.625
Copper, Lake, New York.....	12.00	12.00	12.00	12.00
Tin (Straits), New York.....	50.15	50.15	50.10	45.875
Zinc, East St. Louis.....	7.25	7.25	7.25	5.50
Lead, St. Louis.....	5.35	5.35	5.35	5.10
Antimony (Asiatic), N. Y.....	16.50	16.50	16.50	16.50

\*Mine producers only.

The various basing points for finished and semi-finished steel are listed in the detailed price tables, pages 107-116 herein. On export business there are frequent variations from the above prices. Also in domestic business, there is at times a range of prices on various products, as shown in our detailed price tables.

## Composite Prices

FINISHED STEEL				PIG IRON				SCRAP STEEL			
Jan. 28, 1941.....	2.261c. a Lb.....			\$23.44 a Gross Ton.....				\$20.42 a Gross Ton.....			
One week ago.....	2.261c. a Lb.....			\$23.44 a Gross Ton.....				\$20.42 a Gross Ton.....			
One month ago.....	2.261c. a Lb.....			\$23.44 a Gross Ton.....				\$21.83 a Gross Ton.....			
One year ago.....	2.261c. a Lb.....			\$22.61 a Gross Ton.....				\$17.33 a Gross Ton.....			
High				High				High			
1941.....								\$22.00, Jan. 7			
1940.....	2.261c., Jan. 2	2.211c., Apr. 16		\$23.44, Dec. 23	\$22.61, Jan. 2			21.83, Dec. 30	16.04, Apr. 9		
1939.....	2.286c., Jan. 3	2.236c., May 16		22.61, Sept. 19	20.61, Sept. 12			22.50, Oct. 3	14.08, May 16		
1938.....	2.512c., May 17	2.211c., Oct. 18		23.25, June 21	19.61, July 6			15.00, Nov. 22	11.00, June 7		
1937.....	2.512c., Mar. 9	2.249c., Jan. 4		23.25, Mar. 9	20.25, Feb. 16			21.92, Mar. 30	12.92, Nov. 10		
1936.....	2.249c., Dec. 28	2.016c., Mar. 10		19.74, Nov. 24	18.73, Aug. 11			17.75, Dec. 21	12.67, June 9		
1935.....	2.062c., Oct. 1	2.056c., Jan. 8		18.84, Nov. 5	17.83, May 14			13.42, Dec. 10	10.33, Apr. 29		
1934.....	2.118c., Apr. 24	1.945c., Jan. 2		17.90, May 1	16.90, Jan. 27			13.00, Mar. 13	9.50, Sept. 25		
1933.....	1.953c., Oct. 3	1.792c., May 2		16.90, Dec. 5	13.56, Jan. 3			12.25, Aug. 8	6.75, Jan. 3		
1932.....	1.915c., Sept. 6	1.870c., Mar. 15		14.81, Jan. 5	13.56, Dec. 6			8.50, Jan. 12	6.43, July 5		
1931.....	1.981c., Jan. 13	1.883c., Dec. 29		15.90, Jan. 6	14.79, Dec. 15			11.33, Jan. 6	8.50, Dec. 29		
1930.....	2.192c., Jan. 7	1.962c., Dec. 9		18.21, Jan. 7	15.90, Dec. 16			15.00, Feb. 18	11.25, Dec. 9		
1929.....	2.236c., May 28	2.192c., Oct. 29		18.71, May 14	18.21, Dec. 17			17.58, Jan. 29	14.08, Dec. 3		
Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strip. These products represent 85 per cent of the United States output.				Based on averages for basic iron at Valley furnace and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Southern iron at Cincinnati.				Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia and Chicago.			



# Summary of the Week

**A**N increasingly large volume of steel for defense purposes, superimposed on already crowded order books, is creating problems for the scheduling departments of the steel companies more serious than have hitherto been experienced. Tonnages booked in January have been larger than those of December, in some instances as much as 15 per cent. While a good part of these are forward bookings for the second and third quarters, it is not these so much as defense orders requiring early shipment that are giving trouble, as the latter necessitate the upsetting of previously arranged shipping promises.

In spite of the much tighter situation that is developing, there is no pressure either from the industry, its customers or the government for the use of mandatory priorities. Although the Iron and Steel Committee of the Priorities Board has had one meeting, no step was taken or proposed to bring formal priorities any nearer. It seems to be the intention of government authorities to permit each industry to work out its own remedies without invoking priorities unless they become absolutely necessary.

**A**N example of the avoidance of priority control is the action taken in the aluminum industry, where by agreement between the National Defense Commission and producers, a strict rationing of supplies for civilian requirements has been worked out to apply until such time as the fabricating branch of that industry catches up with defense requirements. It is pointed out that no shortage of aluminum ingots exists, but there is a temporary shortage of finishing equipment, which will be remedied soon.

Strict rationing also exists in the zinc industry, but nothing as drastic as this has yet been proposed for steel, although all steel companies are taking every possible precaution to guard against overbuying and overstocking by their customers. The conclusion is inescapable that some of the present steel buying by non-defense industries is of a speculative character in that it probably exceeds the volume of known requirements. The steel industry thus far has been able to take care of essential needs without serious complaint, but whether it can continue to satisfy all of its commercial customers remains to be seen.

**N**EEDS for other than strictly defense work are mounting. The automobile industry is a heavy buyer and so are nearly all of the makers of household equipment. Tin plate, which has not been drawing heavily on steel making departments, is now coming into a more active period and orders and production have increased. The railroads are also demanding more steel for repair work and new construction. Equipment awards in the past week totaled more than 5500 cars and 50 locomotives. Within the next several months the mills will be called on to deliver a large

• Increasingly large volume of orders adds to steel industry's difficulties but mandatory priorities are no nearer ... Commercial users of aluminum cut down to provide for defense needs... Steel industry's capacity now rated at 84,180,000 net tons ... Philip Murray proposes nationalization of steel.

part of the million tons or more of rails that were ordered late last year. Construction of defense plants continues to add heavily to structural steel and reinforcing bar orders. Fabricated structural steel awards in the past week totaled 43,850 tons and there were inquiries for nearly 30,000 tons, while reinforcing steel awards of more than 10,000 tons were supplemented by new inquiries for more than 23,000 tons.

**A**N example of the difficulty experienced by the mills in scheduling new orders for large tonnages is the completion of awards of 150,000 tons of steel for the 60 ships that are to be built here for the British. This business was divided among several mills, with deliveries to begin March 1 notwithstanding the fact that plate mills were already loaded with tonnage far beyond that time. In fact, on wide plates, deliveries are quoted as far ahead as July and August. The British ships will be of welded construction, which will speed up the work, and parts will be pre-fabricated and assembled at yards on the Atlantic and Pacific coasts. The United States program for 200 ships will not require much steel until the last half of the year.

The American Iron and Steel Institute reports a revised total capacity figure for the industry as of Dec. 31, 1940, of 84,180,000 net tons of open hearth, bessemer and electric steel ingots and steel for castings, a gain of 2,534,000 tons over the total of Dec. 31, 1939. Detailed figures as to the gain in each category of steel making have not yet been announced. On the revised capacity basis, this week's operations are estimated at 97 per cent.

In a plan for nationalization of the steel industry, Philip Murray, head of the (CIO) Steel Workers Organizing Committee, states that there is still idle capacity capable of producing 5,930,195 net tons of finished steel in a year. Murray recommends unification of the steel industry with a "top scheduling department" so that all orders would funnel through one channel and be allocated to the mills in accordance with their ability to produce.

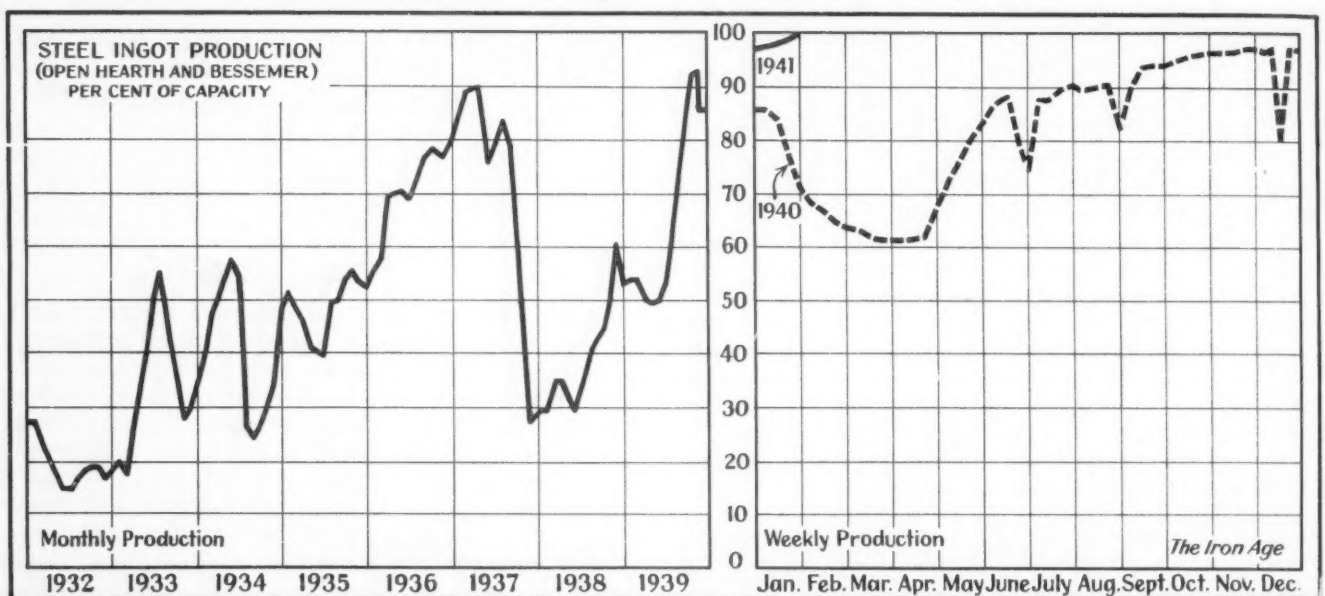


# The Industrial Pace . . .

SLIGHT LOSSES in three of the components of THE IRON AGE index of capital goods activity lowered the index fractionally for the second successive week. Standing at 127.0 in the past week, the index compared with 127.8 in the preceding week, 123.3 a month ago, and 97.2 in the corresponding week of 1940. Steel ingot production advanced less than seasonally to 99 per cent of capacity. Automobile production, lumber carloadings, and activity in the Pittsburgh district were off somewhat, while heavy construction was up 3.7 points to 161.4 in the period.

VOLUNTARY ACTION taken by scrap dealers and brokers at the behest of the government has lowered scrap prices appreciably within two weeks. The Iron Age scrap composite declined \$1.58 to \$20.42 as of Jan. 21, as compared with \$22 in the week of Jan. 7. The Iron Age composite of finished steel prices remains at 2.261 c. a lb., unchanged since last April, when the composite declined temporarily to 2.211 c., and at the same level as in January, 1940. The wholesale price index of metals and metal products has risen less than a half point since the first week of December.

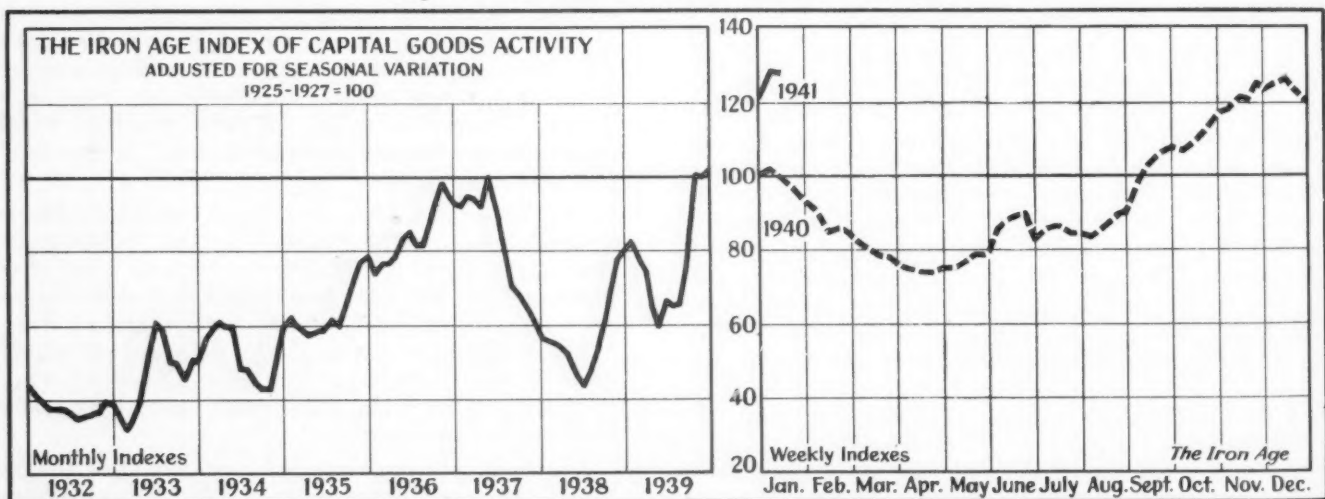
## Revised Ingot Rate at 97%



District Ingot Production, Per Cent of Capacity	Pittsburgh	Chicago	Valleys	Philadelphia	Cleveland	Buffalo	Wheeling	Detroit	Southern	S. Ohio	Western	St. Louis	Eastern	Aggregate
Current Week	100.0	98.5	99.0	94.0	91.0	106.0	104.0	100.0	94.0	107.0	88.0	105.5	99.0	97.0*
Previous Week	100.0	97.0	99.0	94.0	88.0	104.5	104.0	100.0	94.0	104.5	82.5	102.5	107.0	96.5*

\* Revised and adjusted to new capacity rating of American Iron and Steel Institute.

## Capital Goods Index Eases Further

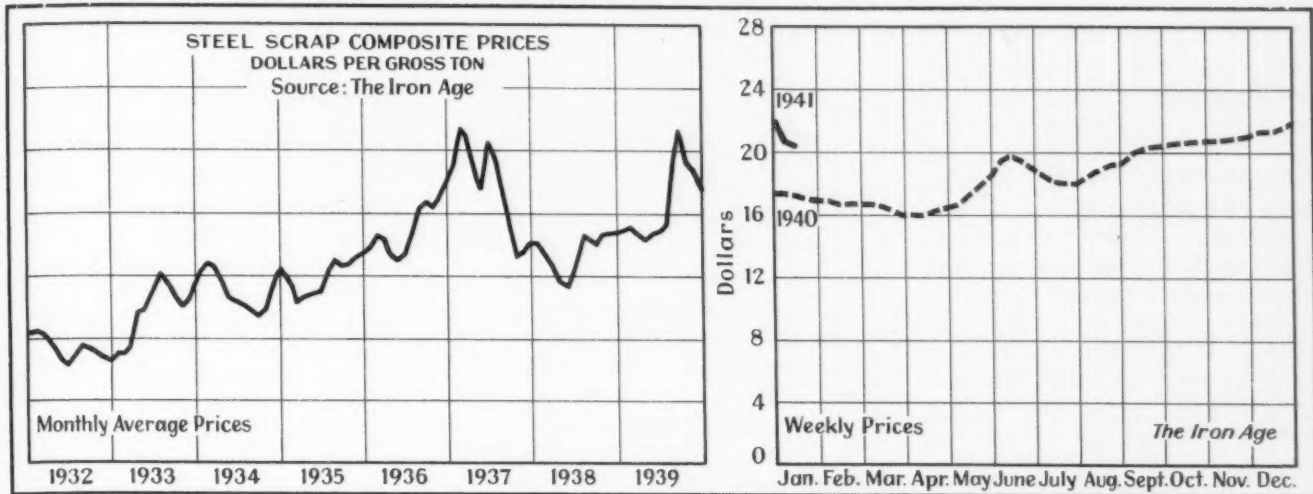


Component	Week Ended	Jan. 25	Jan. 18	Dec. 28	Jan. 27 1940	Jan. 26 1929
Steel ingot production <sup>1</sup>		135.3	135.3	115.3	112.7	118.0
Automobile production <sup>2</sup>		130.5	134.7	127.3	113.9	143.9
Construction contracts <sup>3</sup>		161.4	157.7	159.6	81.7	119.8
Forest products carloadings <sup>4</sup>		79.3	81.2	86.5	64.6	133.2
Pittsburgh output and shipments <sup>5</sup>		128.4	130.2	128.0	113.3	119.2
COMBINED INDEX		127.0	127.8	123.3	97.2	126.8

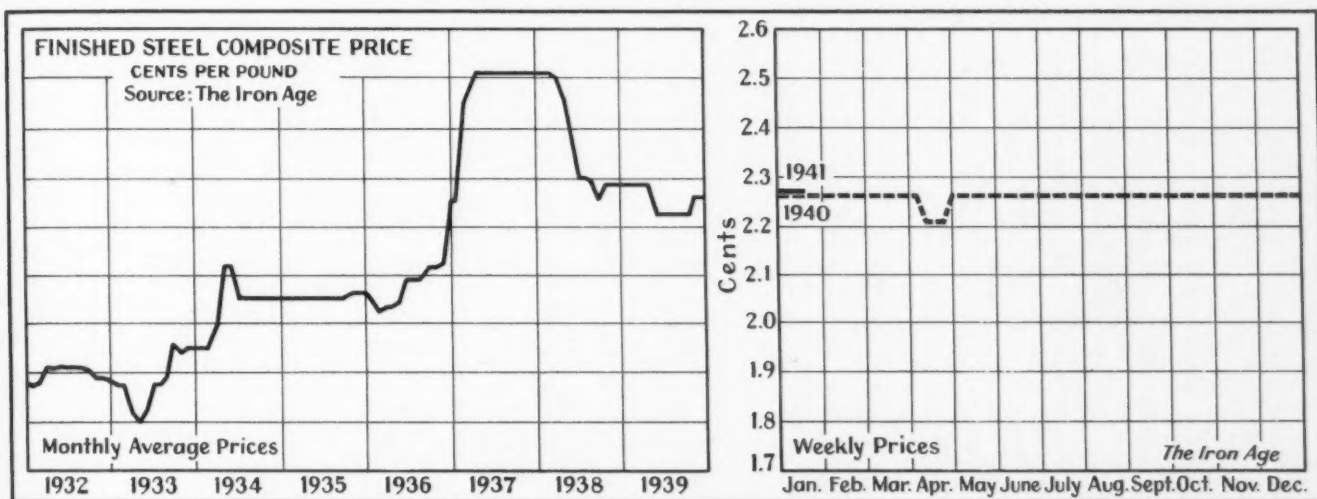
Sources: <sup>1</sup> THE IRON AGE; <sup>2</sup> Wards Automotive Reports; <sup>3</sup> Engineering News-Record; <sup>4</sup> Association of American Railroads; <sup>5</sup> University of Pittsburgh. Indexes of forest products carloadings and activity in Pittsburgh area reflect conditions as of week ended Jan. 18. Other indexes cover week of Jan. 25.



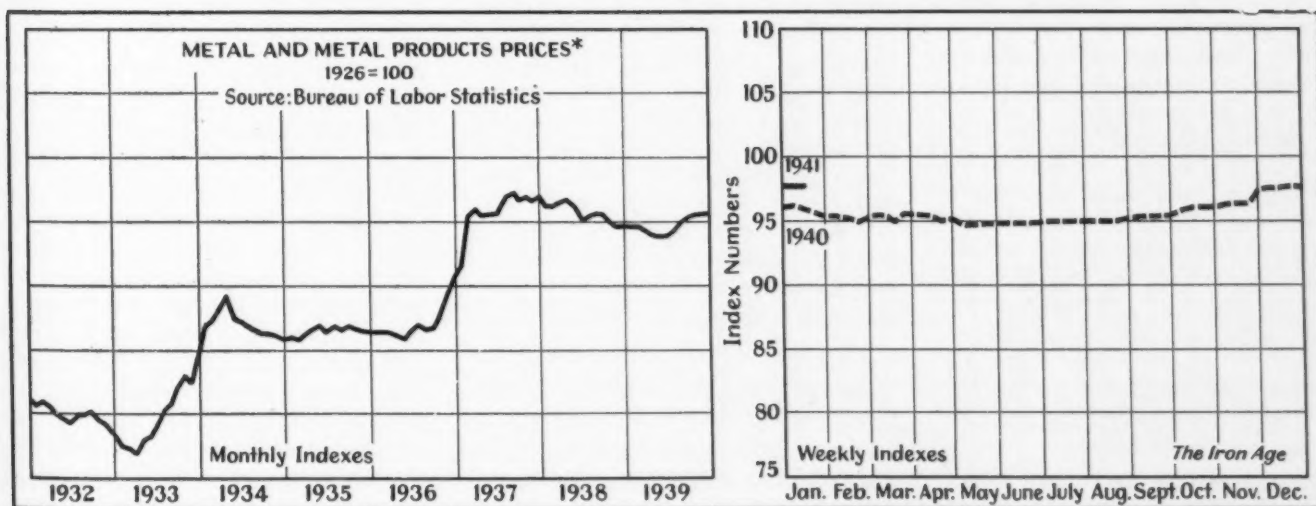
## Voluntary Action Lowers Scrap Prices



## Steel Prices At Same Level As Year Ago



## Metal Products Prices Show Small Variation





# Market News

...THE WEEK'S ACTIVITIES IN IRON AND STEEL

## New Business

... No abatement in heavy volume of forward buying

There has been little or no abatement in the heavy flow of forward buying at PITTSBURGH and the volume of orders continues somewhat above either production or shipments. Specifications are the heaviest in the semi-finished, bar, and sheet markets and more or less normal in wire and tubular goods. Tin plate demand has stepped up considerably in the past two weeks with indications that the trend will continue upward. Backlogs are still running from three to four months and orders so far this month are slightly ahead of the December volume which established a new high record.

CHICAGO steel producers closed January from 5 per cent to 15 per cent ahead of December, depending upon the mill. With some steel makers new business is coming in as high as 50 per cent ahead of shipments. All products are active, even tin plate—the one lone laggard for some time—has stepped up at a rapid clip and production is close to capacity in the modern mills. With defense business moving westward in increasing volume, augmented by strong regular consumers' forward-looking demand, backlogs have piled up to the point where 10 weeks is about the best delivery promise available for any of the popular items.

Railroad interests there are buying heavily—particularly car steel, as are household appliance manufacturers and implement builders. Forgers are booked solid and heavy machinery manufacturers have orders ahead covering six to nine months. Deliveries continue to lengthen at steel mills and warehouses are dipping into stocks. Shell steel is coming out in steady volume, though all the steel for the big shell orders of last fall has not yet been placed. An improvement is noted in concrete bar sales, as in orders and inquiries for piling. Alloy items, especially bars and billets, are extremely active.

The CLEVELAND steel market has been enlivened during the past

week by heavy inquiries from makers of Army tanks and Great Lakes shipbuilders. Railroad requirements also have picked up. Over the nation probably the greatest spurt has come from Pacific Coast fabricators who are seeking to place large tonnages with Eastern mills.

Aggregate bookings at CLEVELAND have been a little lighter recently, but orders for the month up to Jan. 27 were approximately 35 per cent ahead of production in the same period. The necessity for promptly producing several unusually large tonnages received in December acted as a restriction upon the amount of business which certain departments could accept in January.

The trend at BIRMINGHAM shows little change, with orders continuing to exceed shipments on most products by a substantial margin. Demand is particularly heavy for bars and plates and, with shipbuilding activity at Mobile and other Gulf ports constantly on the increase, need for the latter product is expected to mount rather than decrease.

Despite efforts by all producers in EASTERN PENNSYLVANIA to control the volume of new business, exerted most strenuously of late, backlogs push higher and deliveries recede farther. Mills at present are accepting orders only where they believe a real need for steel exists, and are whittling tonnages to conform as closely as possible to past requirements. Heaviest pressure exists in the plate and sheet markets, where deliveries are being promised in few cases before late June. Cold rolled sheets are, in some cases, available before that time. Stainless shipments have been pushed back sharply of late. Those buyers hit hardest by the present situation appear to be the jobbers, some of whom have been selling by carload lots and are now entirely sold out of certain products.

Anticipated decline in automotive bookings for the second quarter does not now appear to be likely.

Aircraft business in southern California is providing substantial volume in specialized alloy tubing.

## Pig Iron

... Supplies are closely restricted to prevent overbuying

The paramount situation in pig iron is that all producers for the merchant trade are closely restricting shipments in an effort to prevent overbuying and accumulation of inventories by consumers. All merchant producers are trying to keep their regular customers supplied with enough iron to meet their operating situation, but there is no elasticity in the supply and some melters are bidding for cast scrap so aggressively as to make that item strong in price despite the efforts of the government to bring about lower prices for all grades of scrap.

Pig iron production at PITTSBURGH is at record levels, with 43 furnaces in blast of an available 47.

Some producers in the CHICAGO area who have not followed the \$1 a ton increase are reluctant to accept orders at this time, except those of immediate need which come from regular customers. A few furnaces in that district are out of the market being booked up well ahead.

No announcement of a price change has yet been made at BIRMINGHAM. Production remains at capacity with all 18 of the district's furnaces in blast.

Hanna Furnace Corp. at Buffalo this week began shipments of 75-ton ladles of hot metal to the open hearth furnaces of Bethlehem Steel Co. across the street. Shipments are made six times daily at stated intervals and will continue, it is expected, until Bethlehem completes construction of its new (and sixth) blast furnace, ground for which was broken two weeks ago.

Except for some small tonnages on hand to meet contingencies, practically no iron is left in the hands of eastern Pennsylvania producers for shipment in this quarter. Large inquiries made but not being accepted at present are believed to be almost entirely in anticipation of future needs, sellers declining to commit themselves to the extent of the tonnages involved.



## Steel Operations

*... Revised capacity total of 84,180,000 tons as of Dec. 31, 1940*

The American Iron and Steel Institute has announced that the revised capacity total of the steel industry as of Dec. 31, 1940, is 84,180,000 net tons of openhearth, bessemer and electric steel ingots and steel for castings, a gain of 2,534,000 tons over the capacity total as of Dec. 31, 1939.

Detailed figures as to the amount of increase in ingot capacity in the various categories have not yet been worked out by the institute, but will be available possibly within a week.

Weekly estimates of ingot production by the American Iron and Steel Institute and THE IRON AGE up to this week have been calculated on the basis of the capacity figures of Dec. 31, 1939. On the basis of the new capacity total the institute estimated ingot production for the current week at 97.1 per cent compared with a revised figure for last week of 96½ per cent.

THE IRON AGE estimate for the current week on the new basis is 97 per cent.

## Railroad Buying

*... Orders placed for 5500 cars and 50 locomotives*

In the past week very heavy orders were placed, amounting to some 5500 freight cars and 50 locomotives with inquiries amounting to 3900 and 55 respectively.

Missouri Pacific Railroad purchased one 1000 hp. diesel-electric locomotive from each, the American Locomotive Co. and the Electro-Motive Corp. and six 600 hp. units from each, Baldwin Locomotive Works and Electro-Motive Corp. American Car & Foundry Co., Mt. Vernon Car & Mfg. Co. and Bethlehem Steel Co. are each to supply 400 all steel hopper cars to this road.

Chicago, Burlington & Quincy Railroad has undertaken a \$12,000,000 building program. The road proposes to build in its own shops 2175 cars, consisting of 200 55-ton hoppers, 250 70-ton ballast and ore cars, 1500 50-ton box-cars and 225 auto device cars. It is reported that Burlington has placed orders for an

additional 30 diesel-electric locomotives. The road's shops will probably also build 350 freight cars for Colorado & Southern and 800 for the Fort Worth & Denver.

Chicago & North Western is reported to have allocated 750 gondola cars to the General American Transportation Corp., 250 to American Car & Foundry Co. and 500 50-ton box cars to Pullman-Standard Mfg. Co. Further orders from this road include 200 70-ton ore cars and five 2000-hp. diesel-electric locomotives and 25 streamline passenger cars.

Union Pacific has ordered five 4-8-8-4 type freight locomotives from the American Locomotive Co. in addition to a similar order of 15 units reported earlier this month. An order for 300 50-ton flat cars and 50 70-ton gondolas was placed with the Pullman-Standard Car Mfg. Co. There is an inquiry for between 30 and 80 coaches.

Northern Pacific has ordered eight passenger and freight engines and two diesel switchers from Baldwin Locomotive Works, six articulated freight and two diesel-electric switching locomotives from American Locomotive Co. and three diesel-electric switchers from Electro-Motive Corp. Denver & Rio Grande Western ordered five 4-6-6-4 units from Baldwin and the Maine Central bought two diesel-electric switchers.

Further car orders come from the Virginian for 100 50-ton box cars placed with the Pressed Steel Car Co., Toronto, Hamilton & Buffalo ordered 75 gondola cars of 75 tons capacity from the National Steel Car Corp. The Tennessee Coal, Iron & Railroad Co. bought 46 freight cars from the Pullman-Standard Car Mfg. Co., and the Linde Air Products Co., 20 70-ton box cars from Pressed Steel Car Co. Budd is making three light weight cars for the Rock Island.

Rail orders are confined to 15,900 tons bought by the Virginian from Bethlehem and 3000 from Carnegie-Illinois Steel Corp.

Chesapeake & Ohio has circulated inquiries for 10 locomotives, 20 stainless steel coaches and 1095 freight cars. Pere Marquette is in the market for 12 locomotives and 40 cabooses, the Canadian National for 725, Grand Trunk Western for 600 and Ann Arbor for 20 freight cars.

## Semi-Finished Steel

*... Capacity output sold for some months ahead*

The volume is holding at a high level and booking would total up to a substantially greater amount if producers would take all business being offered. Semi-finished steel capacity is earmarked for months to come and mills are establishing new records every week from a tonnage standpoint.

Sales of rerolling and forging billets and skelp to Jan. 27 at CLEVELAND show a sharp decline from the extremely heavy tonnages booked in December. Production against previous commitments continues at a record rate.

## Bolts, Nuts and Rivets

*... Sales still mounting and deliveries are extended*

With sales volume still mounting, CLEVELAND producers appear likely to find this month the best January on sales in 10 years. Despite the fact they are cutting up twice as much steel as a year ago, some manufacturers are averaging 60 days on delivery promises on certain items. Heat treating capacity provides limitations on quality bolts and difficulty has been encountered also through temporary shortages of individual sizes of steel bars. Inquiries from shipyards, the railroads and the automotive industry are strongest among consuming classes. Reports from the field indicate that jobbers' stocks are none too large.

## Plates

*... 150,000 tons of steel ordered for British ships*

For the 60 ships to be built for Great Britain by subsidiaries of Todd Shipyards Corp., 1 Broadway, New York, 150,000 tons of steel, mostly plates has been allocated among several mills. Deliveries are to be started about March 1. The ships will be of welded construction and many of the parts will be prefabricated and assembled at the shipyards which are being established at Richmond, Cal., and Portland, Me.

This business has been superim-



posed on an already heavy backlog of plate tonnage and difficulty has been experienced by the mills in working out shipping schedules without serious interference with other orders. Extra wide plates are being quoted by some Eastern mills for as far ahead as July and August.

Ship and freight car building, as well as miscellaneous demand, has resulted in record plate backlogs

business at PITTSBURGH. Deliveries continue extended with national defense projects getting the right of way.

Heavy inquiries from the Pacific Coast are the feature of the plate market at CLEVELAND. Aggregate sales during the first three weeks of January showed a sizable gain over the same part of December. Continuous mills at CLEVELAND are producing large tonnages of plates

weekly, output being limited only by the number of slab heating furnaces.

Deliveries at CHICAGO are lengthening, sheared plates now being promised for June in the 84 in. to 150 in. sizes, while the 30 in. to 84 in. are quoted in 10 to 11 weeks, the same as universal plates. Considerable railroad car buying—now at a very high peak—is the principal factor for this activity in that district. Most CHICAGO mills are sold out on virtually all plate sizes well into the second quarter.

A high volume of miscellaneous requirements from heavy machinery makers, fabricators, etc., on top of heavy shipbuilders' specifications and newly increased railroad orders has pushed shipments back to May and late June in eastern Pennsylvania. The earliest shipments possible in the district is eight to 10 weeks, and this only in strictly limited quantities and sizes.

## Tubular Goods

... Demand is steady but lacks important trend

With no substantial change in market conditions, the tempo on tubular goods sales at PITTSBURGH is no different than a week ago. Oil country goods demand has a little more life and standard pipe requirements are fair, following the spurt during the latter part of 1940.

Tubular goods demand is holding steady in CHICAGO. One consumer placed an order this week for 1600 tons of seamless tubing for regular production needs. No unusual demand is noted in that district but heavy construction is expected to furnish a steady call.

## Merchant Bars

... Delivery promises now range from April to August

With backlogs increasing and April delivery promises being made, the heavy demand for hot rolled bars at PITTSBURGH continues unabated. Requirements are greatly diversified with automotive interests taking a substantial share. With no definite method of accurately gaging indirect defense requirements, it is believed that the volume of hot rolled bar tonnage which will ultimately become part of national defense projects has expanded considerably in the past month.

# ERIE

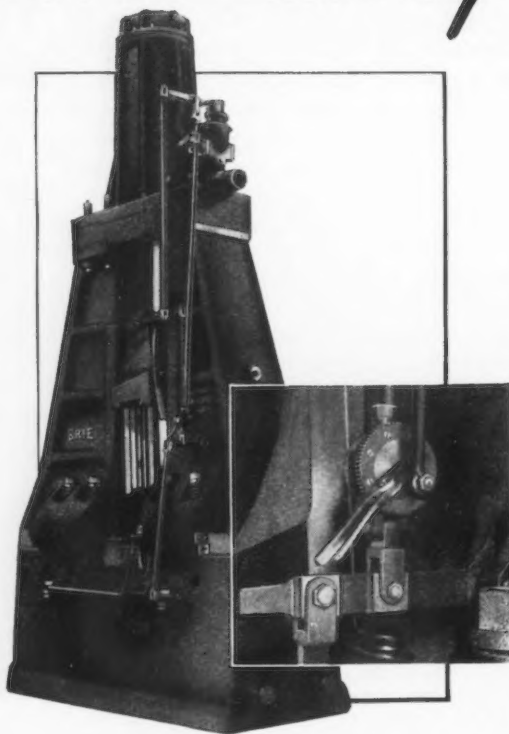
## controllability

### IMMEDIATE RESPONSE TO THE OPERATOR'S SLIGHTEST COMMAND

The accuracy with which Erie Steam Hammers can be controlled makes the fullest use of the operator's skill in producing quality forgings. He can easily adjust the force of the blow and extent of the swing of the ram to a fine degree, and can treadle to obtain anything from the lightest touch to the maximum blow.

In the design and construction of Erie Steam Hammers every detail has been considered to make the control as accurate and efficient as possible. The low ratio of the cylinder area to the valve port areas increases the sensitivity and response. All valve gearing is made of durable forged steel and connections are of rigid tubing to eliminate whip. All the connecting pins are in double shear, to prevent lost motion in the valve gearing.

Controllability is especially important today when maximum production must be obtained without sacrificing quality. Bulletin No. 333 describes these and other features of Erie Steam Hammers. Write for your copy.



The throttle control is conveniently located within easy reach of the operator. With one hand he can quickly select the desired setting of the valve ranging from complete shut off to maximum opening. All wearing parts are hardened to minimize wear and consequent lost motion. On large Erie Hammers, instead of throttle control and treadle, separate hand levers for the throttle valve and motion valve can be furnished.

### ERIE FOUNDRY COMPANY ERIE, PENNSYLVANIA, U.S.A.

DETROIT: 835 Corlie Bldg.  
FRANCE: Penwick, S. A.  
CHICAGO: 849 Washington Bldg.  
CANADA: John Bertram & Sons Co. Ltd.  
INDIANAPOLIS: 335 Postal Station Bldg.  
ENGLAND: Barton, Griffiths & Co., Ltd.



ERIE BUILDS Dependable HAMMERS



One CHICAGO producer now promises certain sizes of bars in August, while other sources quote May and June deliveries. Shell needs are coming out each week, one mill getting 1000 tons in the past seven days. A tractor maker ordered 2000 tons in carbon and alloy varieties, most of which will be shipped direct to forgers.

At CLEVELAND up to Jan. 27 merchant bar sales were off slightly from the corresponding part of December but still exceeded current production by a large margin. Armament tonnages are increasing both numerically and in tonnage.

### Wire Products

... Sales lower at Pittsburgh, high at Cleveland

Wire sales at PITTSBURGH in the past week or so have dipped slightly. This comparison in some measure may be due to the fact that some mills are not accepting all the business being offered.

However, CLEVELAND reports aggregate bookings last week, paced by manufacturers' wire, again exceeded production by a notable margin. Backlogs held by nail mills continue to advance despite the fact this is customarily an off-season for jobbers. All deliveries on nails desired for the government program are being met, but producers' stocks are at low ebb and 30 days on some classes of non-priority business is not an uncommon delivery promise.

Orders for 1000 tons and 600 tons of rods were received last week by a CHICAGO mill—both orders to be converted into nails, indicating the briskness imparted to the wire market by defense construction projects. Industrial fencing continues to provide a steady source of consumption there, too.

### Structural Steel

... Awards 43,850 tons, inquiries for 29,750 tons

Fabricated structural steel awards are 43,850 tons compared with 55,750 tons last week. Outstanding lettings are 6900 tons at Lake City, Mo., for plant buildings for the Remington Arms Co.; 6200 tons at Fort Sam Houston, Tex., for government warehouses.; 3300 tons at Kingsbury, Ind., for 40 in-

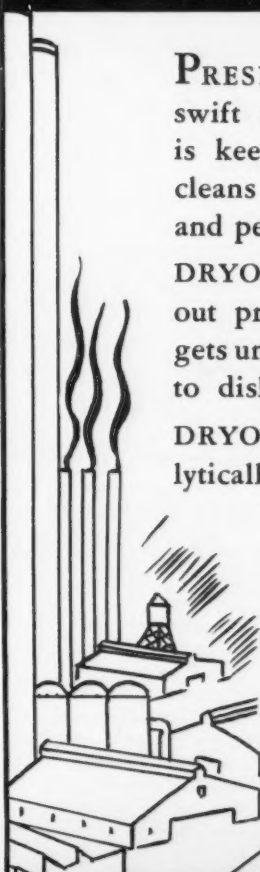
ert storage buildings; 5000 tons for two aircraft buildings for the Studebaker Corp., one at South Bend, Ind., and one at Chicago; 2400 tons for the Consolidated Gas & Electric Co., Baltimore; 1890 tons at Harrison, N. J., for an aeronautical shop for the Otis Elevator Co.; 1700 tons at Dayman, Iowa, for a shell loading plant; 1500 tons at Jeffersonville, Ind., for army warehouses; 1500 tons for a super-charger building for the General Electric Co., at Everett, Mass.;

1500 tons for dam gates at Caddoa, Colo.; 1400 tons for a welding floor at the Philadelphia Navy Yard, and 1400 tons for plant additions for the Aluminum Co. of America, Los Angeles.

New structural steel projects are 29,750 tons. Sizable inquiries include 9500 tons for the Prudential Life Insurance Co. at Newark, N. J.; 6500 tons for a naval gun plant at Detroit for the Hudson Motor Car Co.; 2800 tons at Quincy, Mass., for the Fore River

## NO BOTTLENECK AT THE CLEANING TANKS

**Cowles DRYORTH**  
REG. U. S. PAT. OFF.  
*for Heavy Duty Industrial Cleaning*



PRESENT DAY production demands smooth, swift running operations. Cowles DRYORTH is keeping pace with production demands. It cleans quickly and thoroughly and rinses easily and perfectly.

DRYORTH has greater penetrating and wetting-out properties than ordinary basic alkalis. It gets under the dirt immediately and works swiftly to dislodge soil deposits and lift greasy film.

DRYORTH does the job in still tanks, electrolytically, or in washing machines. It is priced for economical cleaning at any speed, in any concentration.

We will be glad to assist you in determining the most efficient and economical application in your plant.

**THE COWLES DETERGENT COMPANY**  
7016 EUCLID AVENUE CLEVELAND, OHIO

\* **DRYORTH**—Technically  
Anhydrous Sodium Orthosilicate.  
\* **DRYMET**—Commercial  
Anhydrous Sodium Metasilicate.  
\* **CRYSTAMET**—Penta-  
hydrate Sodium Metasilicate.

THE COWLES DETERGENT COMPANY  
Heavy Chemical Department  
7016 Euclid Avenue, Cleveland, Ohio.  
Send prices and details on DRYORTH.

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Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

We are also interested in  
DRYMET ☐ CRYSTAMET ☐



Shipbuilding Division of the Bethlehem Steel Co.; 1450 tons for the Norfolk Dam, Ark.; 1300 tons at San Pedro, Cal., for a navy fleet operating base, on which bids are in; 1000 tons at Billings, Mont., for the Great Northern Hotel, and 1000 tons at Laporte, Ind., for four government fuse loading lines.

Delivery promises on structural steel being given in the Cleveland area appear to average around 12 weeks to start delivery at the earliest instead of the six weeks formerly required by leading fabricators. A few of the smaller companies are solidly booked for six or eight months except for small tonnages desired to round out fabricating plant schedules while large tonnages of steel are being awaited from mills.

## Sheets and Strip

... *Automotive and household equipment makers are heavy buyers*

April deliveries and longer are noted on sheet and strip business at PITTSBURGH. A stepup in tin mill operations will have some effect on the extension of sheet deliveries since certain sizes of the latter were being finished on tin plate cold reduction mills. As noted last week, automotive demand remains at a record level.

Commitments are very generous in volume at CLEVELAND, with all classes of consumers buying far into the future. In addition to the automotive trade stove and refrigerator makers and users of silicon sheets are in the forefront. Order backlogs on soft temper strip, which requires much annealing, are greatly extended. On stainless strip promises under four months are reported difficult to obtain.

Intense interest of household appliance makers—washing machines, refrigerators, stoves, etc.—still holds at CHICAGO. Deliveries are lengthening, strip mill sizes promised in nine to 11 weeks, and strip 2½ in. and under in 11 to 13 weeks. Implement manufacturers are buying and many non-defense consumers are specifying ahead.

Indication that automotive production during the second quarter will be about the same as in the

first quarter has brought a rush of orders from this industry that is rapidly filling second quarter books of SOUTHERN OHIO steel producers. Bookings are exceeding mill capacity by substantial margins.

Business in galvanized sheets in the ST. LOUIS area has been stepped up during the last week, especially in the South.

## Tin Plate

... *Trend of orders and production is upward*

Incoming tin plate specifications in the past two weeks have assumed substantially larger volume than in the same period last month. Activity among sanitary can makers has been stepped up owing to the approaching citrus fruit packing season. More important, however, has been a substantial gain in general line can demand as a result of the expectation that formal priorities may soon be instituted. Makers of cans which would be non-priority material are anxious to build up stocks in order to fulfill subsequent requirements. Tin plate cold reduction mills are estimated to be operating this week at 85 per cent, up 7 points from last week and the trend is expected to continue upward.

## Plant Census Begins In Western Pennsylvania

Pittsburgh

... The Emergency Committee of the Pittsburgh district and the Pittsburgh Commission for Industrial Expansion, at the request of Wm. S. Knudsen, OPM director, is undertaking a survey of industry in ten counties of Western Pennsylvania. Supervision of the census of industrial plant facilities here is under William B. McFall, general chairman of the Emergency Committee, and C. E. Robinson, secretary-manager of the Industrial Commission.

This study is being made in conjunction with the nation-wide survey coordinated by the National Association of Manufacturers and the National Industrial Council. It is expected two weeks will be required to complete this census.

## Coke

... *Production rose in December, reserves increased*

Production of by-product coke rose 2.9 per cent and of beehive coke 17.6 per cent last December over November, according to the Bureau of Mines. The December output of both by-product and beehive coke was 5,352,930 net tons, the former being 4,890,030 tons and the latter 462,900 tons. By-product coke from furnace plants advanced 3.1 per cent in December when compared with November, even adding 22,684 tons to their reserves. At merchant plants, the by-product production was up 2.4 per cent, but stocks were reduced by 118,922 tons.

Total stocks of by-product coke at producers' plants stood at 1,900,736 tons at the end of last year, a decrease of 96,238 tons, or 4.8 per cent, below these on hand at the beginning of December.

Total coke production in 1940 was 56,747,585 tons of which 53,859,585 tons was by-product and 2,888,000 tons was beehive coke. The 1940 coke output was an increase of 28 per cent over the 1939 production of 44,326,600 tons. By-product coke output last year was an increase of 25.6 per cent over the 1939 total of 42,882,300 tons, while the last year's output of beehive was a 100 per cent increase over the 1939 production of 1,444,300 tons.

Idle for more than 10 years, coke ovens at the old Cherry Valley Iron Co. plant at Leetonia, Ohio, near Salem, are being reopened by Wilson Brothers Coal Co. of Toronto, Ohio, principally to use a huge surplus of slag. Eventually it is hoped 60 of the 203 beehive ovens will be in operation.

## Dunn Steel Report Not Yet Completed

Washington

... Gano Dunn, who is preparing the National Defense Advisory Commission's report on steel capacity for the President, said that it is not possible to state whether the report will be completed next week. Mr. Dunn is president of the J. G. White Engineering Co.



# Non-Ferrous Metals

## ... MARKET ACTIVITIES AND PRICE TRENDS

New York, Jan. 28—Most of the non-ferrous market interest in the past week was directed toward conferences being held in Washington between members of the defense commission, zinc and copper secondary market interests and scrap metal sellers. Chief subjects under discussion were irregular prices for zinc current on the Commodity Exchange, prices asked for scrap zinc, and premiums being received by custom smelters of copper. It is believed that priorities for zinc, long imminent, were discussed at the same time.

The copper market in the past week was for the most part unchanged with electrolytic material steady at 12c. a lb., delivered Connecticut Valley. Mine producers continued their system of allocation at that price while custom smelters did a good volume of business at 12.50c. for the March and April positions, almost all of it involving the latter month. As yet the Washington conferences have had no effect on prices in the secondary market. The export market was fairly quiet at 10.50c. f.a.s., although some business was reported done at 10.375c.

### Lead

Probably due to the use of foreign metal totaling around 10,000 tons, stocks of refined lead rose 5,135 tons at the end of December, according to statistics released in the past week. December stocks were 40,926 tons, as compared with 35,791 tons at the end of November. Shipments of 56,755 tons in December were down slightly from 57,510 tons in November. December output, 61,906 tons, was 3980 tons better than that of November and, on a daily basis, established a new high for recent years. Output for the year totaled 585,480 tons, as compared with 497,991 tons in 1939. Buying was in good volume in an orderly market in the past week and sellers either equaled or exceeded their weekly quotas. Most of the sales were for February delivery, now sold up to 70 per cent, while January needs, excepting the usual emergency shipments, are now entirely filled.

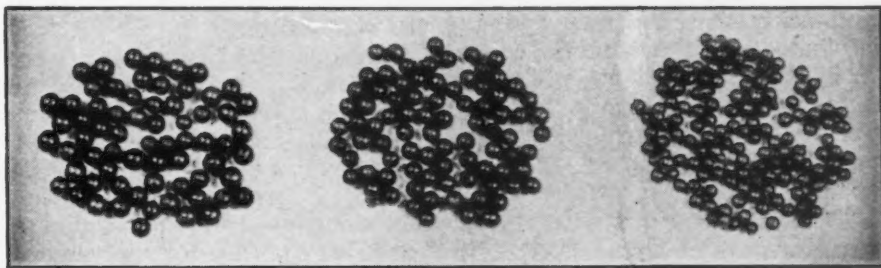
### Zinc

Practically all that can be said of the regular zinc market is that supplies are growing even tighter and producers are straining every facility in a continuously tense effort to give buyers what they need. As yet, no word had been given out regarding government action on prices and priorities, concerning which conferences with secondary smelters and waste material dealers were held in the past week. Statistics covering Commodity Exchange transactions are being looked into at the same time. Sales of slab zinc in the past week fell to 2790 tons from 5963 tons in the preceding period. Shipments were up slightly to 5326 tons from 5095 tons, thereby reducing unfilled orders to 119,984 tons from 122,550 tons on the books at the end of the previous week.

### Tin

Chiefly as a result of the Chinese holiday in the Far East, where stronger prices reflected themselves in this market, domestic prices were slightly higher in the past week. Prompt Straits metal, quoted the previous week at 50.15c. a lb., delivered New York, went to 50.20c. on Wednesday. Interest was of low intensity, most buyers appearing to be unwilling to pay anything more than the price at which the government will buy. In the first couple of days of the current week buyers aroused themselves somewhat and accepted some spot material at 50.20c., but did not seem concerned with February or March arrivals quoted at 50.10c. The Metals Reserve Co. revealed during the week that it has already purchased some 40,000 tons of tin.

(Non-ferrous prices on page 111)



HEAT-TREATED STEEL SHOT

## We manufacture shot and grit for endurance

A shot or grit that will blast fast with a clean finish.

This is the only reason why so many operators are daily changing to our shot and grit, from Maine to California.

The unprecedented demand for our—

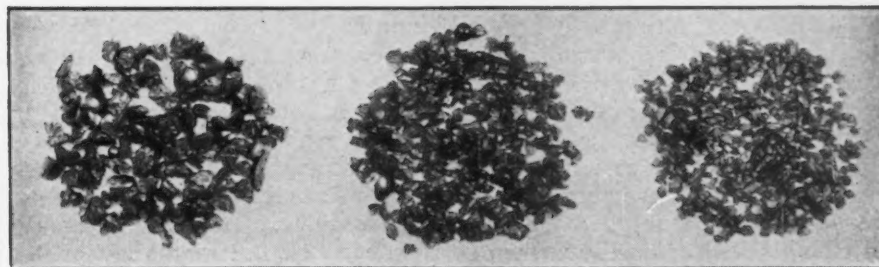
### Heat-Treated Steel Shot and Heat-Treated Steel Grit

has enabled us to expand our production and maintain a quality that is more than satisfactory to our hundreds of customers all over the country.

## HARRISON ABRASIVE CORPORATION

MANCHESTER, NEW HAMPSHIRE

HEAT-TREATED STEEL GRIT





# Machine Tools

... SALES, INQUIRIES AND MARKET NEWS

## Sub-contracting by Tool Makers is Widening

Cleveland

• • • Inquiries in this area are approaching a new high point, led by such expansion developments as Cleveland Pneumatic Tool Co., which is talking of spending an additional \$4,000,000 on machine tools, jigs, fixtures and other equipment; Warner & Swasey Co., Thompson Products, Inc.; Eaton Mfg. Co. and others. At Toledo, Chevrolet, Willys-Overland and Spicer are among the foremost prospects. Other big programs are numerous in many sections of the country, particularly those of Buick and Studebaker.

Orders received by producers in this vicinity up to Jan. 24 were running at about the December level. Secondary demand is growing constantly and apparently will gain even if there is a slackening of direct awards.

Sub-contracting by the machine tool industry is widening constantly. Many more foundries and machine shops in this area will be drawn into the picture within a short time.

## Tool Makers Worried About Effects of Draft

Cincinnati

• • • Government purchase of machine tools appears to be undiminished, while the general demand for tools is steady. In fact, district manufacturers say they see no end of the continued stampede to purchase machine tools. Accordingly, 1942 order books are being generously covered. Production problems are still outstanding, and the Cincinnati Milling Machine Co. has announced another building program, this time a new office and executive building to complement the already large plant in operation. The same company has an extensive shop expansion program, which it is pushing rapidly to completion.

A belief that shop forces are going to be affected seriously by the draft resulted in a large conference between leading machine tool officials and draft board men

during the past week. At this meeting, Frederick Geier, president of the National Machine Tool Manufacturers Association and the Cincinnati Milling Machine Co., put the question succinctly when he said, "The question is not whether a defense industry or a defense army is more important, the question now is one of timing. Machine tools come first in the timing. They must be supplied before an Army or Navy can be equipped." He further requested that it was necessary that the industry be permitted to retain its skilled workers. The conference brought a statement from the occupational deferment adviser for the State, in which he told manufacturers and draft appeal agents that the primary consideration was whether a man best serves his government by remaining at his job or by entering military service. Some relief is expressed by the manufacturers as a result of the conference.

The question of training more men for jobs is still proceeding and plant forces are steadily being expanded. The seven-day week, however, has not been adopted except in a few isolated instances, and the general feeling is that it is not yet the time for such a step.

## Used Machinery Prices Being Brought Under Control

New York

• • • Steps are being taken by the National Defense Advisory Commission to bring used and rebuilt machinery prices under control, according to dealers here. Inflation in prices began several years ago when Japanese, Russian and South American buying was heavy and was greatly accelerated in the past year when the British Purchasing Commission culled the market for all available used equipment. In a market where scarcity prevailed, the government itself partly contributed to rising prices by selling excess equipment on the basis of competitive bids. Lately some of the larger industrial plants have been following this practice. The natural result has been that dealers have been

bidding against one another and have offered as much as 100 per cent or more of the original purchase price of the machine 20 or more years ago.

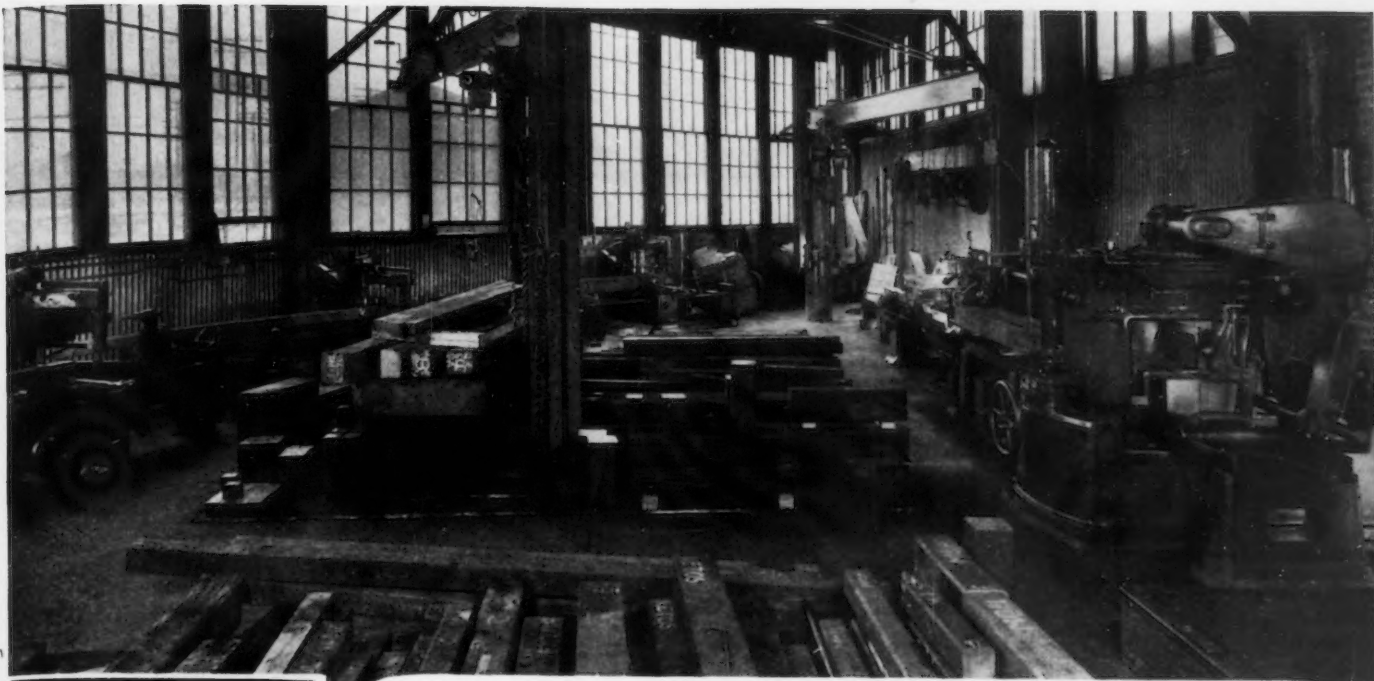
As a preliminary step to relieving the situation, a canvass is being made by the defense commission of all dealer stocks and the prices at which the tools are being held for sale. British purchasing is to be controlled by clearing all purchases of used equipment through the defense commission. This will take the most inflationary aspect out of the market. Efforts are also being made to urge manufacturers to disclose to the defense commission all machinery not being used for present production, particularly large tools on which deliveries for new machines are being quoted from 10 to 14 months. Manufacturers are being asked to part with such machinery at a reasonable profit and not try to gouge the government, which, from now on, will pay for most of the equipment for defense work and probably machinery for the British as well, assuming the "lend-lease" bill is passed. The plea to hold down prices of used machinery to a reasonable level is being put on a patriotic basis. Full cooperation is expected from dealers who have pledged their efforts toward this end through local district representatives.

## Wesson Builds New Cutting Tool Plant at Detroit

• • • The Wesson Co., 1050 Mt. Elliott, Detroit, manufacturers of cemented carbide and high-speed steel cutting tools, has broken ground for a new plant on Woodward Heights Blvd., Ferndale, a suburb of Detroit. The building is of one story, steel-concrete-brick construction.

The new plant and equipment will more than double the capacity of the present Mt. Elliott Avenue plant. Campbell Construction Co. is the general contractor. The Ferndale plant is expected to be ready for occupancy about March 15.





### It's 100% at the Anderson Shumaker Plant in Chicago

There's probably no better test of a sawing machine's stamina, than in the cutting-off department of a production forge shop, like the Anderson Shumaker Plant in Chicago. There saws run continuously at high speed on large and tough billets . . . and all the sawing machines are **MARVELS**; four 9A, High Speed Automatics and a giant No. 18 Hydraulic (with 3 more 9As on order).

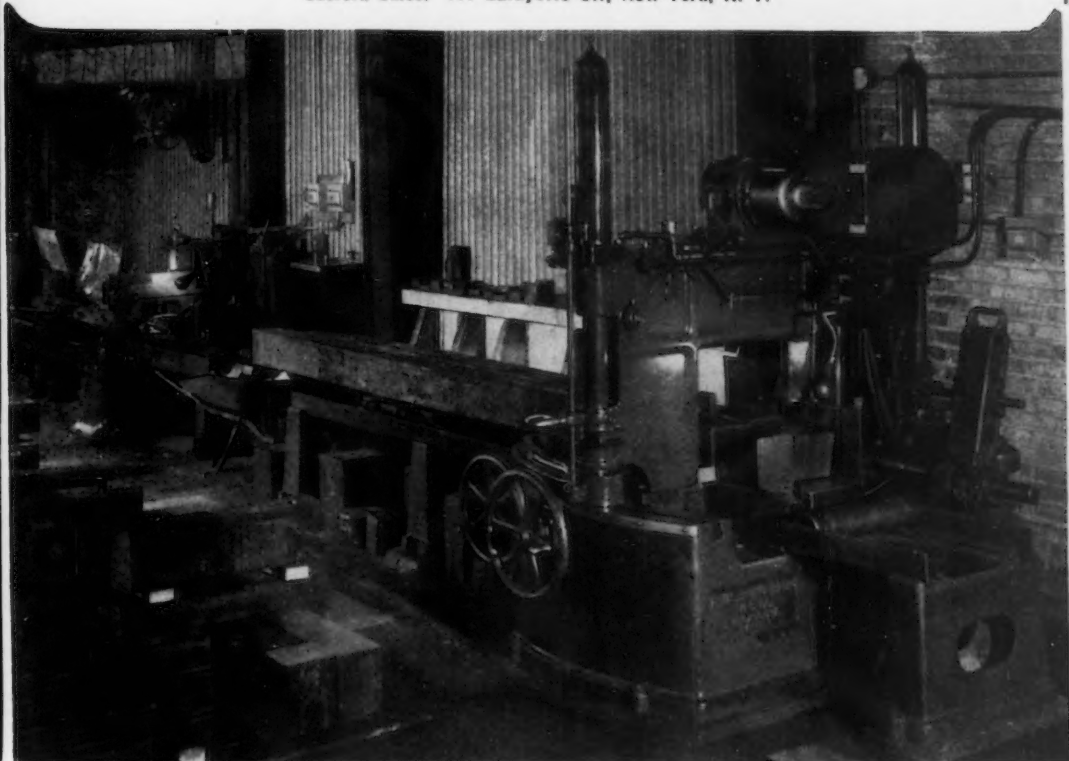
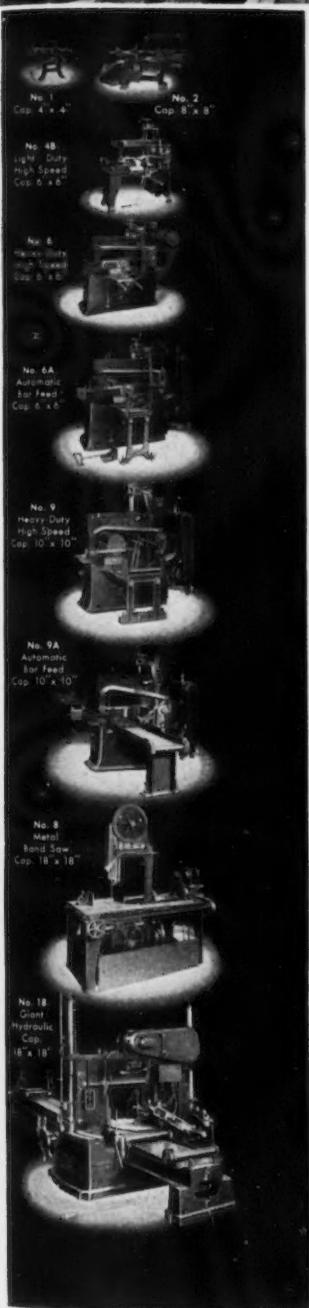
Because all 9As are equipped with an Automatic bar push-up and feed measure, cut and count automatically, one operation with two fixed cranes can keep this room full of saws running. That's cutting-off efficiency, for at the speed these heavy duty saws cut steel it's real quantity production too.



**ARMSTRONG-BLUM MFG. CO.**

*"The Hack Saw People"*

5700 Bloomingdale Ave., Chicago, U. S. A.  
Eastern Sales: 199 Lafayette St., New York, N. Y.





# Scrap

## ... MARKET ACTIVITIES AND QUOTATION TRENDS

Whether "stabilization" of scrap markets may be considered as having been completed or not, the fact remains that fluctuations are less numerous. In steel grades the trend is still slightly downward, but in cast grades the reverse is true. In some districts cast scrap is scarce and there is active bidding for available supplies, with the result that prices are about 50c a ton higher. THE IRON AGE steel scrap composite price declined for two consecutive weeks after Leon Henderson's plea for lower prices, but this week there is no further change, the composite figure remaining at \$20.42, same as last week. Although No. 1 steel in the three major markets has not changed this week, some of the secondary steel grades have declined, and there has been weakness in other markets not included in the composite.

Foundrymen are upset over the difficulty of obtaining cast scrap and rails. In this connection railroads have informed the National Defense Advisory Commission that they will assort their short and long scrap rails instead of lumping them together as they have done hertofore when selling old material. This arrangement has been adopted in order to facilitate distribution of scrap rail supplies for foundries and rerollers. The short rails will be allocated to the foundries and the long ones to rerollers. C. A. Bishop, executive assistant to Defense Commissioner Leon Henderson, head of the Price Stabilization Division, who is cooperating with founders and rerollers in order to see that each gets a proper share of old rails, is of the opinion that the action taken by the railroads to assort scrap rails gives further assurance that sufficient supplies will be made available for both the foundries and the rerollers.

### Pittsburgh

No. 1 heavy melting remains quatably unchanged this week at \$21 to \$22 but the market is more or less nominal and activity has been at a minimum. Bad weather conditions have contributed to the scarcity of scrap. Recent accumulations have been fairly well dissipated. Further clarification may be expected when railroad lists close next week.

### Philadelphia

Mill buying, which has been lagging somewhat during the recent period of price adjustment to a lower basis, has been resumed on a scale resembling that which prevailed prior to the announcement of the government's desire for lower quotations. Steel scrap buyers appear to be temporarily satisfied with the current prices, but the cast situation continues unrevised. Cast grades have grown very scarce in this district and sellers believe that not even higher prices would bring out sufficient material to meet the demand, especially in view of the scarcity of pig iron. Old bundles are quoted at \$17 to \$17.50 and cast borings at \$16 to \$16.50, while shafting is unchanged at \$25 to \$25.50.

### Chicago

The scrap market here has settled down to a quiet level, with No. 1 heavy melting steel unchanged at \$19.50 to \$20. Brokers are offering dealers a standard price and mills in turn are pursuing the same course. It is reported that most of the higher contracts are just about completed, which has also contributed to stabilization. All interests are aware of the necessity of keeping prices down in accordance with government policies and all are cooperating to that end.

### Youngstown

Lacking new mill sales, the scrap market here is stagnant as to price changes. Quite a few cars were on track at the start of this week but considering the high rate of open-hearth activity, the amount of material was probably not out of proportion. Railroad lists closing next week are expected to provide a better clue to conditions.

### Cleveland

Except for minor adjustments here and there in prices, the Cleveland market has been marking time lately. The slump following Leon Henderson's action does not appear to have brought supplies into the open so far. Foundrymen in particular are upset by the difficulty in obtaining No. 1 machinery cast as well as scrap rails.

### Buffalo

With no scrap sales into consumption, the situation here has not clarified itself yet and dealers are in an obvious fog. The area's largest consumer will pay \$20 for No. 1 heavy melting steel but the offer has gone unnoticed by local dealers, some of whom have two to three more weeks of deliveries scheduled on old orders. Cast scrap is strong and prices are up 50c. this week on basis of dealer sales of No. 1 machinery and No. 1 cupola

cast, stove plate and low phos. plate. Other quotations are nominal.

### St. Louis

A round tonnage of special ties was sold to a St. Louis foundry at 50c. to \$1.50 lower than the preceding week, but melting steel sales were unchanged. The movement from the country is on the increase, in line with the government's plan to stabilize the market.

### Cincinnati

Old material sales are in moderate volume, but dealers indicate that there is no aggressive buying yet. Prices are being held at the present level and the trade indicates that a fair amount of material is coming into the market at the recently reduced prices. Mills are slightly hesitant in making extensive purchases, although they are taking all material on old commitments.

### Detroit

Prices in the Detroit area on iron and steel scrap have moved sidewise during the past week, with some dealers and brokers reporting little activity. Cast iron has been the notable exception, continuing to display strength in an active market. Prices are unchanged, except for the quotation on hydraulic compressed sheets, which has declined on the basis of most recent mill orders. Large tonnages of automotive scrap will be offered by plants on lists closing before the end of the month, with a few carrying over until the first of next week. Offerings include those of Chrysler, Chevrolet, Ternstedt, Buick, Pontiac and AC Spark Plug.

### New York

The individual desires and interests of government, brokers and yards are being slowly aligned, albeit considerable stress and strain still prevails below the market surface. Prices as quoted are fairly representative of the current market, but some variations tend to confuse the market. Eastern Pennsylvania consumers are only moderately stocked and are pressing for deliveries. Snow and ice have interfered with collection and preparation. Foundry melt has been pushed up even further, and cast grades thus are increasingly in demand.

### Boston

So far as prices go the market has stopped gyrating, but there is a concerted movement among consumers to force values downward. A Pennsylvania mill earlier in the week buying steel turnings on a \$9.65 a ton f.o.b. basis, now will not pay more than \$9.40. Another mill paying on a basis of \$13.38 a ton f.o.b. for skeleton or busheling has dropped its price to \$12.90.



# IRON AND STEEL SCRAP PRICES

## PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel	\$21.00 to \$22.00
Railroad heavy mltng.	22.00 to 22.50
No. 2 heavy melting	19.50 to 20.50
Railroad scrap rails	22.50 to 23.00
Rails 2 ft. and under	26.50 to 27.00
Comp. sheet steel	21.50 to 22.00
Hand bundled sheets	20.50 to 21.00
Heavy steel axle turn.	20.50 to 21.00
Heavy steel forge turn.	19.50 to 20.00
Machine shop turnings	15.50 to 16.00
Short shov. turn. alloy free	16.00 to 16.50
Mixed bor. & turn.	15.50 to 16.00
Cast iron borings	16.00 to 16.50
Cast iron carwheels	22.00 to 22.50
Heavy breakable cast.	17.50 to 18.00
No. 1 cupola cast.	22.00 to 22.50
RR. knuckles & coup.	26.50 to 27.00
Rail coil springs	27.00 to 27.50
Rail leaf springs	27.00 to 27.50
Rolled steel wheels	27.00 to 27.50
Low phos. billet crops	27.00 to 27.50
Low phos. punchings	26.00 to 26.50
Low phos. heavy plate	25.50 to 26.00
Railroad malleable	25.50 to 26.00

## PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel	\$20.00
No. 2 hvy. mltng. steel	18.50
Hydraulic bund., new	20.00
Hydraulic bund., old	\$17.00 to 17.50
Steel rails for rolling	25.00 to 26.00
Cast iron carwheels	23.00
Hvy. breakable cast.	22.00 to 22.50
No. 1 cupola cast	23.50 to 24.00
Mixed yard (f'd'y) cast	20.50
Stove plate (steel wks.)	19.00 to 19.50
Railroad malleable	23.50 to 24.00
Machine shop turn.	14.50
No. 1 blast furnace	14.00
Cast borings	16.00 to 16.50
Heavy axle turnings	19.50
No. 1 low phos. hvy.	26.00 to 26.50
Couplers & knuckles	26.00 to 26.50
Rolled steel wheels	26.00 to 26.50
Steel axles	25.00 to 25.50
Shafting	25.00 to 25.50
Spec. iron & steel pipe	18.00 to 18.50
Cast borings (chem.)	16.50

## CHICAGO

Delivered to Chicago district consumers:

Per Gross Ton	
Hvy. mltng. steel	\$19.50 to \$20.00
Auto. hvy. mltng. steel alloy free	18.50 to 19.00
No. 2 auto. steel	16.25 to 16.75
Shoveling steel	19.50 to 20.00
Factory bundles	19.00 to 19.50
Dealers' bundles	17.50 to 18.00
No. 1 busheling	18.50 to 19.00
No. 2 busheling, old	11.50 to 12.00
Rolled carwheels	23.25 to 23.75
Railroad tires, cut	23.00 to 23.50
Railroad leaf springs	23.00 to 23.50
Steel coup. & knuckles	23.00 to 23.50
Axle turnings	18.75 to 19.25
Coil springs	24.00 to 24.50
Axle turn. (elec.)	19.75 to 20.00
Low phos. punchings	23.00 to 23.50
Low phos. plates 12 in. and under	22.50 to 23.00
Cast iron borings	13.50 to 14.00
Short shov. turn.	14.00 to 14.50
Machine shop turn.	13.50 to 14.00
Rerolling rails	23.00 to 23.50
Steel rails under 3 ft.	23.00 to 23.50
Steel rails under 2 ft.	22.50 to 24.00
Angle bars steel	22.50 to 23.00
Cast iron carwheels	20.50 to 21.00
Railroad malleable	24.25 to 24.75
Agric. malleable	17.50 to 18.00
Per Net Ton	
Iron car axles	\$23.50 to \$24.00
Steel car axles	24.00 to 24.50
Locomotive tires	18.00 to 18.50
Pipes and flues	14.00 to 14.50
No. 1 machinery cast.	18.50 to 19.00
Clean auto. blocks	18.00 to 18.50
No. 1 railroad cast.	17.50 to 18.00
No. 1 agric. cast.	16.50 to 17.00
Stove plate	13.00 to 13.50
Grate bars	14.00 to 14.50
Brake shoes	14.25 to 14.75

## YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel	\$21.50 to \$22.00
No. 2 hvy. mltng. steel	20.00 to 20.50
Low phos. plate	24.50 to 25.00
No. 1 busheling	20.50 to 21.00
Hydraulic bundles	21.00 to 21.50
Machine shop turn.	14.50 to 15.00

## CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel	\$20.50 to \$21.00
No. 2 hvy. mltng. steel	19.50 to 20.00

Comp. sheet steel	\$20.00 to \$20.50
Light bund. stampings	16.50 to 17.00
Drop forge flashings	18.50 to 19.00
Machine shop turn.	13.50 to 14.00
Short shov. turn.	14.00 to 14.50
No. 1 busheling	19.75 to 20.25
Steel axle turnings	20.00 to 20.50
Low phos. billet and bloom crops	25.00 to 25.50
Cast iron borings	14.00 to 14.50
Mixed bor. & turn.	14.00 to 14.50
No. 2 busheling	14.00 to 14.50
No. 1 Machinery cast.	22.00 to 22.50
Railroad cast	21.50 to 22.00
Railroad grate bars	15.50 to 16.00
Stove plate	15.50 to 16.00
Rails under 3 ft.	25.50 to 26.00
Rails for rolling	25.00 to 25.50
Railroad malleable	24.00 to 24.50

## BUFFALO

Per gross ton delivered to consumer:

No. 1 hvy. mltng. steel	\$21.00
No. 2 hvy. mltng. steel	19.00
Scrap rails	21.50
New hvy. b'ndled sheets	18.50
Old hydraulic bundles	17.00
Drop forge flashings	18.50
No. 1 busheling	18.50
Machine shop turn.	\$13.50 to 14.00
Shov. turnings	14.50 to 15.00
Mixed bor. & turn.	13.50 to 14.00
Cast iron borings	13.50 to 14.00
Knuckles & couplers	25.00 to 25.50
Coil & leaf springs	25.00 to 25.50
Rolled steel wheels	25.00 to 25.50
No. 1 machinery cast.	21.00 to 21.50
No. 1 cupola cast.	19.50 to 20.00
Stove plate	17.00 to 17.50
Steel rails under 3 ft.	26.50 to 27.00
Cast iron carwheels	18.50 to 19.50
Railroad malleable	23.50 to 24.00
Low phos. plate	27.00 to 27.50

## ST. LOUIS

Dealers' buying prices per gross ton delivered to consumer:

Selected hvy. melting	\$18.00 to \$18.50
No. 1 hvy. melting	17.50 to 18.00
No. 2 hvy. melting	16.50 to 17.00
No. 1 locomotive tires	20.50 to 21.00
Misc. stand. sec. rails	20.00 to 20.50
Railroad springs	22.00 to 22.50
Bund'ed sheets	13.00 to 13.50
Cast bor. & turn.	11.00 to 11.50
Machine shop turn.	11.50 to 12.00
Heavy turnings	13.50 to 14.00
Rails for rerolling	22.00 to 22.50
Steel car axles	25.00 to 25.50
No. 1 RR wrought	14.25 to 14.75
No. 2 RR wrought	16.50 to 17.00
Steel rails under 3 ft.	23.00 to 23.50
Steel angle bars	21.00 to 21.50
Cast iron carwheels	21.00 to 21.50
No. 1 machinery cast.	20.00 to 20.50
Railroad malleable	21.00 to 21.50
Breakable cast	17.50 to 18.00
Stove plate	15.00 to 15.50
Grate bars	14.00 to 14.50
Brake shoes	13.50 to 14.00

## CINCINNATI

Dealers' buying prices per gross ton at yards:

No. 1 hvy. mltng. steel	\$18.25 to \$18.75
No. 2 hvy. mltng. steel	16.25 to 16.75
Scrap rails for mltng.	23.25 to 23.75
Loose sheet clippings	12.75 to 13.25
Hyd'lic bundled sheets	17.00 to 17.50
Cast iron borings	9.25 to 9.75
Machine shop turn.	10.00 to 10.50
No. 1 busheling	14.25 to 14.75
No. 2 busheling	7.75 to 8.25
Rails for rolling	24.50 to 25.00
No. 1 locomotive tires	20.25 to 20.75
Short rails	26.25 to 26.75
Cast iron carwheels	18.75 to 19.25
No. 1 machinery cast.	22.25 to 22.75
No. 1 railroad cast.	20.50 to 21.00
Burnt cast	12.75 to 13.25
Stove plate	12.75 to 13.25
Agricul. malleable	18.00 to 18.50
Railroad malleable	21.00 to 21.50
Mixed hvy. cast.	19.25 to 19.75

## BIRMINGHAM

Per gross ton delivered to consumer:

No. 1 hvy. melting steel	\$18.00
No. 2 hvy. melting steel	17.00
No. 1 busheling	16.00
Scrap steel rails	18.00
Steel rails under 3 ft.	20.00
Rails for rolling	19.00
Long turnings	9.50
Cast iron borings	8.50
Stove plate	13.50
Steel axles	13.00
No. 1 RR wrought	16.00
No. 1 cast	18.50
No. 2 cast	13.50
Cast iron carwheels	19.00
Steel carwheels	18.00

## DETROIT

Dealers' buying prices per gross ton, f.o.b. cars:

No. 1 heavy melting	\$16.50 to \$17.00
No. 2 heavy melting	15.50 to 16.00
Borings and turnings	11.50 to 12.00
Machine shop turnings	11.00 to 11.50
Long turnings	10.00 to 10.50
Short shov. turnings	12.00 to 12.50
No. 1 cast	19.50 to 20.00
Automotive cast	19.50 to 20.00
Hvy. breakable cast.	16.00 to 16.50
Stove plate	11.50 to 12.00
Hydraul. comp. sheets	18.00 to 18.50
New busheling	16.50 to 17.00
Sheet clips	14.00 to 14.50
Flashings	16.50 to 17.00
Low phos. plate	19.00 to 19.50

## NEW YORK

Dealers' buying prices per gross ton on cars:

No. 1 hvy. mltng. steel	\$16.00
No. 2 hvy. mltng. steel	15.00
Hvy. breakable cast.	\$18.00 to 18.50
No. 1 machinery cast.	18.50 to 19.00
No. 2 cast	16.50 to 17.00
Stove plate	15.00 to 15.50
Steel car axles	22.00 to 24.00
Shafting	19.50 to 20.50
No. 1 RR wrought	17.50 to 18.00
No. 1 wrought long	17.00 to 17.50
Spec. iron & steel pipe	12.00 to 12.50
Rails for rolling	19.00 to 19.50
Clean steel turnings*	10.00 to 10.50
Cast borings*	11.00 to 11.50
No. 1 blast furnace	9.00 to 9.50
Cast borings (chem.)	11.00 to 11.50
Unprepared yard scrap	9.50 to 10.00
Light iron	7.00 to 7.50

Per gross ton delivered local foundries:

No. 1 machin. cast.	\$20.50 to \$21.00
No. 2 cast	17.00 to 17.50

\* \$1.50 less for truck loads.

## BOSTON

Dealers' buying prices per gross ton, f.o.b. cars:

Breakable cast	\$16.75 to \$17.00
Machine shop turn.	9.25 to 10.00
Mixed bor. & turn.	8.50 to 10.00
Bun. skeleton long	13.00 to 13.25
Shafting	19.00 to 19.50
Stove plate	13.75 to 14.00
Cast bor. chemical	10.00 to 10.25

Per gross ton delivered consumers' yards:

Textile cast	\$22.00 to \$24.50
No. 1 machine cast.	22.00 to 24.00

Per gross ton delivered dealers' yards:

Unprepared yard scrap	\$11.50 to \$12.00
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## PACIFIC COAST

Per net ton delivered to consumer:

San Fran.	Los Ang.	Seattle
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No. 1 hvy. mltng. steel	Nominal
No. 2 hvy. mltng. steel	
Bundles	

## CANADA

Dealers' buying prices at these yards, per gross ton:

Toronto		Montreal
Low phos. steel	\$13.00	\$12.50
No. 1 hvy. mltng. steel	11.25	10.75
No. 2 hvy. mltng. steel	10.00	9.75
Mixed dealers steel	8.75	8.25
Drop forge flashings	9.75	9.25
New loose clippings	8.75	8.25
Busheling	6.00	5.50
Scrap pipe	7.75	7.25
Steel turnings	8.00	7.50
Cast borings	8.00	7.50
Machinery cast	22.00	21.00
Dealers' cast	21.00	20.00
Stove plate	16.00	15.50

## EXPORT

Dealers' buying prices per gross ton:

New York, truck lots, delivered barges

No. 1 hvy. mltng. steel	\$16.50 to \$17.00
No. 2 hvy. mltng. steel	15.50 to 16.00
No. 2 cast	17.00 to 17.50
Stove plate	15.00 to 16.00

Boston on cars at Army Base or Mystic Wharf

No. 1 hvy. mltng. steel	\$17.25
No. 2 hvy. mltng. steel	16.25
Rail (scrap)	\$17.25 to 17.50

Philadelphia, delivered alongside boats, Port Richmond

No. 1 hvy. mltng. steel	Nominal
No. 2 hvy. mltng. steel	Nominal



# Construction Steel

...STRUCTURAL STEEL, REINFORCING BARS, PLATES, PILING, ETC.

## Fabricated Steel

Structural steel awards declined to 43,850 tons from 55,750 tons last week; new projects are lower at 29,750 tons against 35,305 tons a week ago; plate awards call for 930 tons.

### AWARDS

#### NORTH ATLANTIC STATES

- 2400 Tons, Baltimore, plant for Consolidated Gas & Electric Co., to Belmont Iron Works, Philadelphia.
- 1890 Tons, Harrison, N. J., Otis Elevator Co. aeronautical shop, to Bethlehem Steel Co., Bethlehem, Pa.
- 1500 Tons, Everett, Mass., General Electric Co. supercharger building, to Bethlehem Steel Co., Bethlehem, Pa., through Turner Construction Co., Boston, contractor.
- 1400 Tons, Philadelphia, welding floor, Navy Yard, to Bethlehem Steel Co., Bethlehem, Pa., through Hughes-Foulkrod Co., Philadelphia.
- 750 Tons, Berlin, N. J., State bridge FAGM-6-B, to American Bridge Co., Pittsburgh.
- 530 Tons, New York, synagogue, 40 West 68th Street, to Lehigh Structural Steel Co., Allentown, Pa.
- 525 Tons, Cheektowaga, N. Y., second unit of arms factory for Buffalo Arms Corp., new subsidiary of Houdaille-Hershey Corp., to R. S. McMannus Steel Construction Co., Inc., Buffalo, through George A. Fuller Co., New York, general contractor.
- 435 Tons, Brooklyn, Prospect Avenue elevated parkway contract B-10, to Bethlehem Steel Co., Bethlehem, Pa.
- 430 Tons, Middlesex County, N. J., highway bridge, route 25, section 33A, to American Bridge Co., Pittsburgh.
- 330 Tons, College Point, N. Y., building and bridge for Kleinert Rubber Co., to Ingalls Iron Works Co., Pittsburgh plant.
- 320 Tons, Camden, N. J., power house for Campbell Soup Co., to Lehigh Structural Steel Co., Allentown, Pa.
- 300 Tons, New Bedford, Mass., Revere Copper & Brass Co. unit, to James H. Tower Co., Providence, R. I.
- 215 Tons, Farmingdale, Long Island, Liberty aircraft shop, to Lehigh Structural Steel Co., Allentown, Pa.
- 215 Tons, New York, Harlem Savings Bank, 181st Street and Broadway, to Jones & Laughlin Steel Service, Inc., Long Island City, N. Y.
- 150 Tons, Lawrence, Mass., Woolworth store, to Bethlehem Steel Co., Bethlehem, Pa.
- 150 Tons, Niagara Falls, N. Y., building for Niacet Chemical Co., to Ernst Iron Works, Inc., Buffalo.
- 120 Tons, Scranton, Pa., Lackawanna Avenue bridge, to Pine Brook Iron Works, Scranton, Pa.

#### THE SOUTH

- 6200 Tons, Fort Sam Houston, Tex., warehouses for Government, to Mosher Steel Co., Dallas.
- 650 Tons, Rutledge, Tex., spillway bridge, specification No. 945, Marshall Ford Dam, to American Bridge Co., Pittsburgh.
- 170 Tons, Wheeling, W. Va., Murphy store, to Keystone Engineering Co., Pittsburgh.

#### CENTRAL STATES

- 6900 Tons, Lake City, Mo., Remington Arms plant buildings 1, 2 and 3, to Bethlehem Steel Co., Bethlehem, Pa.
- 3300 Tons, Kingsbury, Ind., 40 inert storage buildings, to American Bridge Co., Pittsburgh.
- 3000 Tons, South Bend, Ind., aircraft plant for Studebaker Corp., to R. C. Mahon Co., Detroit.
- 2000 Tons, Chicago, aircraft plant for Studebaker Corp., to Joseph T. Ryerson & Son, Inc., Chicago.
- 1700 Tons, Dayman, Iowa, shell loading buildings, to Vierling Steel Works, Chicago.
- 1500 Tons, Jeffersonville, Ind., Army warehouses, to International Steel Co., Evansville, Ind.
- 725 Tons, Minneapolis, hangars, to Minneapolis-Moline Power Implement Co., Minneapolis.
- 600 Tons, Fort Wayne, Ind., aircraft plant for Studebaker Corp., to Mississippi Valley Structural Steel Co., St. Louis.
- 500 Tons, Chicago, repairs to elevated railway, to Hansell-Elecock Co., Chicago.
- 490 Tons, Rockbridge, Ill., State highway bridge, to Illinois Steel Bridge Co., Jacksonville, Ill.
- 300 Tons, St. Marys, Ohio, buildings for Goodyear Tire & Rubber Co., to Burger Iron Co., Akron, through H. N. Tuttle.
- 260 Tons, Ironton, Ohio, coke ovens for Semet-Solvay Corp., to Bethlehem Steel Co., Bethlehem, Pa.
- 220 Tons, Dayton, Ohio, laboratory and shop building at Wright Field, to Burger Iron Co. Dayton plant.
- 155 Tons, Massillon, Ohio, extension to Republic Steel Corp. plant, to Fort Pitt Bridge Works Co., Massillon.
- 100 Tons, Ashtabula, Ohio, ore bridge repairs, to Fort Pitt Bridge Works Co., Pittsburgh.

#### WESTERN STATES

- 1500 Tons, Caddoa, Colo., dam gates, to Consolidated Steel Co., Los Angeles.
- 1400 Tons, Los Angeles, Aluminum Co. of America plant additions; 1000 tons to Minneapolis-Moline Power Implement Co., Minneapolis; 400 tons to Pacific Iron & Steel Co., Los Angeles.
- 225 Tons, Los Angeles, F. W. Woolworth Co. store, to Consolidated Steel Corp., Los Angeles.
- 145 Tons, Burbank, Cal., State underpass, to Consolidated Steel Corp., Los Angeles, through Byerts & Dunn and Oscar Oberg, Los Angeles, joint contractors.

- 115 Tons, Los Angeles, California Mill Supply Co. plant addition, to Western Iron & Metal Co., Los Angeles, through Ted R. Cooper Co., Los Angeles, contractor.

#### PENDING STRUCTURAL PROJECTS

##### NORTH ATLANTIC STATES

- 9500 Tons, Newark, N. J., building for Prudential Life Insurance Co.
- 2800 Tons, Quincy, Mass., turret and armor shop for Bethlehem Steel Co., Fore River Shipbuilding division.
- 900 Tons, Brooklyn, ramp connection, McDonald Avenue.
- 815 Tons, Brooklyn, inspection shed and service building.
- 700 Tons, Edgewood, Md., Army assembly plant and magazines.
- 600 Tons, Buffalo, factory addition for Sterling Engine Co.
- 525 Tons, Aberdeen Proving Ground, Md., automotive shop building for Government.
- 510 Tons, Elizabethport, N. J., Singer Mfg. Co. building.
- 350 Tons, Camden, N. J., launchway girders for New York Shipbuilding Corp.
- 315 Tons, Bowmansville, N. Y., State highway bridge; Ellis G. Dehlin, New Hartford, N. Y., low bidder on general contract.
- 300 Tons, South Boston, two buildings for dry dock; Sawyer Construction Co., Boston, contractor.
- 290 Tons, Erie County, N. Y., grade crossing elimination.
- 275 Tons, Schenectady, N. Y., office building for American Locomotive Co.
- 260 Tons, Bridgeport, Conn., building for Y.W.C.A.
- 200 Tons, Leverett, Mass., beam bridge for State.
- 160 Tons, Burlington, N. J., alterations to boiler house, for Public Service Electric & Gas Corp.
- 120 Tons, Ambridge, Pa., bleachers for Borough of Ambridge.

##### CENTRAL STATES

- 6500 Tons, Detroit, Naval gun plant for Hudson Motor Car Co.
- 1800 Tons, Robertson, Mo., hangars, etc., for Navy Department; Lecoutour-Parsons Construction Co., St. Louis, general contractor.
- 1450 Tons, Norfolk Dam; bids Feb. 20.
- 1000 Tons, La Porte, Ind., four Government fuze loading lines.
- 420 Tons, Dayton, Ohio, Air Corps warehouse units, 1, 2, 3, 4, 5.

##### WESTERN STATES

- 1300 Tons, San Pedro, Cal., Navy fleet operating base; bids in; Atkinson & Pollock, contractors.
- 1000 Tons, Billings, Mont., Great Northern Hotel.
- 165 Tons, Los Angeles, Whitney telephone exchange.

## Weekly Bookings of Construction Steel

Week Ended	Jan. 28, 1941	Jan. 21, 1941	Dec. 30, 1940	Jan. 30, 1940	Year to Date	
					1941	1940
Fabricated structural steel awards	43,850	55,750	44,260	11,400	173,600	46,100
Fabricated plate awards	930	12,485	1,535	360	14,915	17,650
Steel sheet piling awards	655	540	0	0	2,955	250
Reinforcing bar awards	10,710	10,015	8,620	5,530	39,670	23,595
Total Letting of Construction Steel	56,145	78,790	54,415	17,290	231,140	87,595



## FABRICATED PLATES

### AWARDS

- 635 Tons, Fall River, Mass., two oil tanks for Shell Oil Co., to Bethlehem Steel Co., Bethlehem, Pa.  
295 Tons, Wood River, Ill., 18 tanks for Shell Oil Co., to Graver Tank & Mfg. Co., Chicago.

### PENDING PROJECTS

- 27,310 Tons, and 575 tons of bolts and washers, Panama Canal; bids at office of General Purchasing Officer, Panama Canal, Washington, Feb. 10.

## SHEET PILING

### AWARDS

- 655 Tons, Orange, Tex., Consolidated Shipyard to Bethlehem Steel Co., Bethlehem, Pa.

### NEW PROJECTS

- 950 Tons, Cleveland, river project No. 35; National Engineering & Contracting Co. low bidder.  
400 Tons, Paducah, Ky., flood prevention work for U. S. Engineer's Office, Louisville, Ky.; bids Feb. 11.  
250 to 290 Tons, San Francisco, sea wall; bids Feb. 14.

## Reinforcing Steel

Awards of 10,710 tons; 23,330 tons in new projects.

### AWARDS

#### ATLANTIC STATES

- 1300 Tons, Brooklyn, elevated parkway, contracts B-13 and B-15, to Bethlehem Steel Co., Bethlehem, Pa.; P. T. Cox Co., contractor.  
700 Tons, New York, Clason Point housing project; to Republic Steel Corp., Cleveland, through Carroll-McCreary Co.; Tobias Heller & Co., contractor.  
555 Tons, Brooklyn, elevated parkway, contract B-16, to Jones & Laughlin Steel Corp., Pittsburgh, through Fireproof Products Co.; Corbett Construction Co., contractor.  
350 Tons, Portland, Me., Martin's Point bridge, to Bancroft & Martin Rolling Mills Co., Portland; Wyman & Simpson, Inc., contractor.  
300 Tons, New Britain, Conn., manufacturing plant, to Northern Steel Co., Boston, through Aberthaw Construction Co., Boston, contractor.  
133 Tons, Mountainside, N. J., bridge, route 29, section 2-E, to Joseph T. Ryerson & Son, Inc., Chicago; through Franklin Contracting Co.

#### SOUTH AND CENTRAL

- 1526 Tons, Wilmington, Ill., underground magazines, to Truscon Steel Co., Youngstown; through Midwest Construction & Asphalt Co.  
1400 Tons, Columbus, Ohio, Wright Aeronautical Corp. building, to Taylor Gaskin, Inc., Detroit; Darin & Armstrong, Detroit, contractors.  
575 Tons, Rolla, Mo., Fort Leonard Wood cantonment, to Missouri Rolling Mills Corp., St. Louis; Seventh Corps Area, contractor.  
460 Tons, Cincinnati, Streitman Biscuit Co. bakery, to Truscon Steel Co.; Ferro Concrete Construction Co., contractor.  
258 Tons, Chicago, Commonwealth Edison Co., to Inland Steel Co., Chicago, through Herlihy-Mid-Continent Co., contractor.  
241 Tons, North Little Rock, Ark., Silver City Courts housing project, to Truscon Steel Co., Youngstown, through Linebarger Construction Co. and William Peterson.  
228 Tons, Harvey, La., plant for Continental Can Co., to Truscon Steel Co., Youngstown, through Austin Co., Cleveland.  
175 Tons, Marion, Ind., bridges Nos. 2090 and 2094, to Bethlehem Steel Co., Bethlehem, Pa.  
131 Tons, Columbia, S. C., requirements of Palmetto Quarries, to Truscon Steel Co., Youngstown, through Rust Engineering Co.  
110 Tons, Franklin County, Ohio, County project, to Ben Tom Supply Co., Columbus.

#### WESTERN STATES

- 607 Tons, Burbank, Cal., State underpass, to Soule Steel Co., Los Angeles, through Byerts & Dunn and Oscar Oberg, Los Angeles, contractors.

- 500 Tons, Tongue Point, Ore., Navy Air Station, to Soule Steel Co., Portland.  
429 Tons, Los Angeles, County specification 6818, to Trojan Steel, Inc., Los Angeles.  
225 Tons, Fort Tejon, Cal., State highway work, to Blue Diamond Corp., Los Angeles, through Griffith Co., Los Angeles, contractor.  
175 Tons, Los Angeles, Lincoln High School physical education building, to Blue Diamond Corp., Los Angeles.  
115 Tons, Los Angeles, improvements, Los Angeles River, section 8, to Soule Steel Co., Los Angeles, through United Concrete Pipe Co., Los Angeles, contractor.  
114 Tons, Ostrich Bay, Wash., Naval ammunition depot, to Truscon Steel Co., Youngstown, through Martensen & Co.  
100 Tons, Burbank, Cal., Lockheed Aircraft Corp. building 146, to Blue Diamond Corp., Los Angeles.

## PENDING REINFORCING BAR PROJECTS

### ATLANTIC STATES

- 2000 Tons, Hartford, Conn., defense housing, unit 4; bids Feb. 3.  
2000 Tons, Washington, Capitol Street armory building.  
900 Tons, Brooklyn, Coney Island sewage works, contract No. 5.

### SOUTH AND CENTRAL

- 14,000 Tons, Morganza, La., Floodway State highway bridge; bids in.  
1800 Tons, Little Rock, Ark., Norfolk Dam; bids Feb. 20.  
900 Tons, Chicago, Coca Cola Bottling Co. plant.  
600 Tons, South Bend, Ind., Studebaker Corp. airplane engine plant.  
300 Tons, Adams County, Colo., railroad underpasses.  
250 Tons, Racine, Wis., Johnson Wax Co. factory.  
100 Tons, Milwaukee, city hospital.  
100 Tons, Milwaukee, Columbia Hospital.

### WESTERN STATES

- 142 Tons, Mount Rainier, Wash., Nickel Creek bridge and three viaducts; bids Feb. 6.  
132 Tons, Long Beach, Cal., municipal airport administration building.  
105 Tons, San Diego, Cal., San Diego State College buildings; J. E. Burrell & Son, contractors.

## Cast Iron Pipe

Lynn, Mass., rejected bids on a tonnage of 8-in. cement lined pipe and will shortly re-advertise for bids.

Hartford, Conn., Metropolitan District, has taken under advisement bids on 29,000 ft. of 4 to 20-in. cement lined pipe, 36 tons of cement lined fittings and 8 tons of unlined fittings. Bids were called on centrifugal cast pipe, class 150, or reinforced concrete pipe.

Columbia, S. C., plans pipe line extensions in water system for increased supply at Fort Jackson, including filter plant and other waterworks installation. Cost close to \$270,000.

Chattanooga Valley Water District, Walker County, R. D. Williams, Room 309, Patten Hotel, Chattanooga, Tenn., in charge, plans early purchase of 23,750 ft. of 6-in. pipe, 14,000 ft. of 4-in., and 54,375 ft. of 2-in. for water system in district. Fund of \$119,000 has been arranged, of which \$57,000 represents a bond issue and remainder through Federal aid. J. B. McCrary Co., Atlanta, Ga., is consulting engineer.

Damar, Kan., plans pipe lines for water system and other waterworks installation. Cost about \$35,000. Financing is being arranged through Federal aid. Paulette & Wilson, Public Utilities Building, Salina, Kan., are consulting engineers.

Defiance, Ohio, plans about 30,000 ft. of 4 to 12-in. pipe for extensions in water system. Cost close to \$77,200. Work is scheduled to begin soon. Frank Taylor is superintendent of municipal waterworks.

Metropolitan Utilities District, Eighteenth and Harney Streets, Omaha, Neb., W. L. Byrne, general manager, plans pipe line extensions in main high-pressure water system in different parts of city. Cost about \$250,000. Also will build new water storage tank in Southwestern part of city, to cost about \$175,-

000, and new compressor station in another location, estimated at \$260,000.

Niagara, Wis., has secured permission to arrange financing for \$55,000 for water pipe line system and other waterworks installation, including elevated steel tank and tower. Work will begin soon. Federal Engineering Co., Davenport, Iowa, is consulting engineer.

Freeport, Tex., plans pipe line extensions in water system and other waterworks installation. Bond issue of \$180,000 has been approved. It is proposed to ask bids in about 60 days. Homer G. Olmsted, 3905 Galveston Road, Houston, Tex., is consulting engineer.

Poteau, Okla., plans pipe line extensions in water system, totaling about 28,000 ft. of various sizes. Financing is being arranged through Federal aid. Rex Collins, McAlester, Okla., is consulting engineer.

## Pipe Lines

Anderson-Prichard Oil Corp., Oklahoma City, Okla., plans steel pipe line gathering system in oil field near Tuleta, Tex., to be used in conjunction with new natural gasoline plant in that district. Cost close to \$100,000. Mills-Bennett Production Co., Beeville, Tex., is interested in project.

Forest Oil Co., Forest Oil Building, Bradford, Pa., plans pressure pipe lines for crude oil transmission in connection with development of oil properties near Bolivar, Allegany County, N. Y., including steel pipe line gathering system. Several new wells will be drilled. Entire project will cost close to \$100,000.

General Purchasing Officer, Panama Canal, Washington, asks bids until Feb. 4 for 10,000 ft. of steel pipe; 300,000 ft. of galvanized carbon steel pipe; and 4800 ft. of black steel pipe (Schedule 4761).

Picayune, Miss., has authorized surveys and estimates of cost for new pipe line system for municipal natural gas distribution, including control station, meter house and other operating facilities. S. L. McConnell, Monroe, La., is consulting engineer.

Humble Oil & Refining Co., Humble Building, Houston, Tex., has approved plans for new 8-in. cast iron pressure pipe line from Hawkins, Tex., oil field to connection with main pipe line system for crude oil transmission. Work will be carried out by company forces. Cost about \$100,000.

Corsicana, Tex., has plans for pipe line system for municipal natural gas distribution, with booster plant, control station, meter house and other operating facilities. Cost about \$400,000. Proposed to call special election soon to vote bonds in amount noted.

Thibodeaux, La., has let contract to Bepouey & Rittiner, Canal Bank Building, New Orleans, at \$123,552 for pressure pipe line system for municipal natural gas distribution, including main welded steel pipe line for connection with supply source, control station and other operating facilities.

## Trade Notes

Sterling Wheelbarrow Co., Milwaukee, which once supplied 25 per cent of the national wheelbarrow output, has jumped production in its foundry division to two shifts because of the brisk upturn in demand for castings and other foundry products, largely as the result of defense works in the local area and elsewhere.

Lavine Gear Co., 634 E. Keefe Avenue, Milwaukee, is changing its name to the Ben Hur Mfg. Co. for the reason that its gear business was discontinued about six months ago. The new name comes from the Ben Hur Trailer Co., which the firm assimilated three years ago and which product has become the company's main product. The army has ordered 5200 of the trailers.

United States Foundry Corp., 1227 W. Lincoln Avenue, Milwaukee, has been organized by W. P. Zmyslony, Laura and Marjorie Zmyslony, with a capital stock of 500 shares of preferred at \$10 each and 500 shares of common, no par value.



# Prices of Finished Iron and Steel...

Steel prices on these pages are f.o.b. basing points (in cents per lb.) unless otherwise indicated. On some products either quantity deductions or quantity extras apply. In many cases gage, width, cutting, physical, chemical extras, etc., apply to the base price. Actual realized prices to the mill, therefore, are affected by extras, deductions, and in most cases freight absorbed to meet competition.

Basing Point ↓ Product													DELIVERED TO		
	Pitts- burgh	Chicago	Gary	Cleve- land	Birm- ingham	Buffalo	Youngs- town	Spar- rows Point	Granite City	Middle- town, Ohio	Gulf Ports, Cars	Pacific Ports, Cars	Detroit	New York	Phila- delphia
<b>SHEETS</b>															
Hot rolled	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢	2.20¢	2.10¢		2.65¢	2.20¢	2.34¢	2.27¢
Cold rolled <sup>1</sup>	3.05¢	3.05¢	3.05¢	3.05¢		3.05¢	3.05¢		3.15¢	3.05¢		3.70¢	3.15¢	3.39¢	3.37¢
Galvanized (24 ga.)	3.50¢	3.50¢	3.50¢		3.50¢	3.50¢	3.50¢	3.50¢	3.60¢	3.50¢		4.05¢		3.74¢	3.67¢
Enameling (20 ga.)	3.35¢	3.35¢	3.35¢	3.35¢			3.35¢		3.45¢	3.35¢		4.00¢	3.45¢	3.71¢	
Long ternes <sup>2</sup>	3.80¢		3.80¢									4.55¢			
Wrought iron	4.75¢														
<b>STRIP</b>															
Hot rolled <sup>3</sup>	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢		2.10¢			2.10¢		2.75¢	2.20¢		
Cold rolled <sup>4</sup>	2.80¢	2.90¢		2.80¢			2.80¢		(Worcester = 3.00¢)				2.90¢		
Cooperage stock	2.20¢	2.20¢			2.20¢		2.20¢								
Commodity C-R	2.95¢			2.95¢			2.95¢		(Worcester = 3.35¢)				3.05¢		
<b>TIN PLATE</b>															
Standard cokes (Per 100-lb. base box)	\$5.00	\$5.00	\$5.00						\$5.10						
<b>BLACK PLATE</b>															
29 gage <sup>5</sup>	3.05¢	3.05¢	3.05¢						3.15¢			4.05¢ (10)			
<b>TERNES, M'FG.</b>															
Special coated (Per base box)	\$4.30		\$4.30						\$4.40						
<b>BARS</b>															
Carbon steel	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢			(Duluth = 2.25¢)		2.50¢	2.80¢	2.25¢	2.49¢	2.47¢
Rail steel <sup>6</sup>	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢					2.50¢	2.80¢			
Reinforcing (billet) <sup>7</sup>	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢			2.50¢	2.55¢	2.25¢		
Reinforcing (rail) <sup>7</sup>	2.05¢	2.05¢	2.05¢	2.05¢	2.05¢	2.05¢	2.05¢				2.40¢	2.45¢	2.15¢		
Cold finished <sup>8</sup>	2.65¢	2.65¢	2.65¢	2.65¢		2.65¢							2.70¢		
<b>PLATES</b>															
Carbon steel	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢		2.10¢	2.10¢	(Coatesville and Claymont = 2.10¢)		2.45¢	2.65¢		2.29¢	2.15¢
Wrought iron	3.80¢														
Floor plates	3.35¢	3.35¢									3.70¢	4.00¢		3.71¢	
Alloy	3.50¢	3.50¢				(Coatesville = 3.50¢)									
<b>SHAPES</b>															
Structural	2.10¢	2.10¢	2.10¢		2.10¢	2.10¢			(Bethlehem = 2.10¢)		2.45¢	2.75¢		2.27¢	2.215¢
<b>SPRING STEEL C-R</b>															
0.26 to 0.50 Carbon	2.80¢			2.80¢					(Worcester = 3.00¢)						
0.51 to 0.75 Carbon	4.30¢			4.30¢					(Worcester = 4.50¢)						
0.76 to 1.00 Carbon	6.15¢			6.15¢					(Worcester = 6.35¢)						
1.01 to 1.25 Carbon	8.35¢			8.35¢					(Worcester = 8.55¢)						
<b>WIRE<sup>9</sup></b>															
Bright	2.60¢	2.60¢		2.60¢	2.60¢				(Worcester = 2.70¢)						
Galvanized	2.60¢	2.60¢		2.60¢	2.60¢				(Worcester = 2.70¢)						
Spring	3.20¢	3.20¢		3.20¢					(Worcester = 3.30¢)						
<b>PILING</b>															
Steel sheet	2.40¢	2.40¢				2.40¢						2.95¢			
<b>IRON BARS</b>															
Common		2.25¢				(Terre Haute, Ind. = 2.15¢)									
Refined	3.75¢														
Wrought	4.40¢														

<sup>1</sup> Mill run sheets are 10c. per 100 lb. less than base; and primes only, 25c. above base. <sup>2</sup> Unassorted 8-lb. coating. <sup>3</sup> Widths up to 12 in. <sup>4</sup> Carbon 0.25 per cent and less. <sup>5</sup> Applies to 29 gage within certain width and length limitations. <sup>6</sup> For merchant trade. <sup>7</sup> Straight lengths as quoted by distributors. <sup>8</sup> Also shafting. For quantities of 20,000 to 39,999 lb. <sup>9</sup> Carload lots to manufacturing trade. <sup>10</sup> Boxed.



## PRICES

### SEMI-FINISHED STEEL

#### Billets, Blooms and Slabs

Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham, Sparrows Point (Rerolling only). Prices delivered Detroit are \$2 higher f.o.b. Duluth, billets only, \$2 higher.

*Per Gross Ton*  
Rerolling ..... \$34.00  
Forging quality ..... 40.00

#### Shell Steel

Basic open hearth shell steel f.o.b. Pittsburgh and Chicago.

*Per Gross Ton*  
3 in. to 12 in. .... \$52.00  
12 in. to 18 in. .... 54.00  
18 in. and over ..... 56.00

Note: The above base prices apply on lots of 1000 tons of a size and section to which are to be added extras for chemical requirements, cutting to length, or quantity. This type of steel is for hot rolled sections used for the forging of shells and includes rounds, round squares, and special sections.

#### Sheet Bars

Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point, Md.

*Per Gross Ton*  
Open hearth or bessemer ..... \$34.00  
Skelp

Pittsburgh, Chicago, Youngstown, Coatesville, Pa., Sparrows Point, Md.

*Per Lb.*  
Grooved, universal and sheared 1.90c.

#### Wire Rods

(No. 5 to 9/32 in.) *Per Lb.*  
Pittsburgh, Chicago, Cleveland. 2.00c.  
Worcester, Mass. .... 2.10c.  
Birmingham ..... 2.00c.  
San Francisco ..... 2.50c.  
Galveston ..... 2.25c.  
9/32 in. to 4/64 in., \$3 a net ton higher. Quantity extras apply.

### ROOFING TERNE PLATE

(F.o.b. Pittsburgh; Package, 112 Sheets)

	20x14 in.	20x28 in.
8-lb. coating I.C.	\$6.00	\$12.00
15-lb. coating I.C.	7.00	14.00
20-lb. coating I.C.	7.50	15.00
25-lb. coating I.C.	8.00	16.00
30-lb. coating I.C.	8.63	17.25
40-lb. coating I.C.	9.75	19.50

### WIRE PRODUCTS

(To the Trade, f.o.b. Pittsburgh, Chicago, Cleveland, Birmingham)

*Base per Keg*  
Standard wire nails ..... \$2.55  
Coated nails ..... 2.55  
Cut nails, carloads ..... 3.85  
*Base per 100 Lb.*  
Annealed fence wire ..... \$3.05  
*Base Column*  
Woven wire fence\* ..... 67  
Fence posts (carloads) ..... 69  
Single loop bale ties ..... 56  
Galvanized barbed wire† ..... 70  
Twisted barbless wire ..... 70

\*15½ gage and heavier. †On 80-rod spools in carload quantities.  
Note: Birmingham base same on above items, except spring wire.

### BOLTS, NUTS, RIVETS, SET SCREWS

#### Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

*Per Cent Off List*

Machine and carriage bolts:  
½ in. and smaller by 6 in. and shorter ..... 68  
9/16 and ¾ in. by 6 in. and shorter ..... 66  
¾ to 1 in. by 6 in. and shorter ..... 64  
1½ in. and larger, all lengths ..... 62  
All diameters over 6 in. long ..... 62  
Lag, all sizes ..... 65

Plow bolts ..... 68½  
Hot pressed nuts; c.p.c., t-nuts; square, hex., blank or tapped:  
½ in. and smaller ..... 66  
9/16 to 1 in. inclusive ..... 63  
1½ to 1½ in. inclusive ..... 61  
1½ in. and larger ..... 60

On above items, excepting plow bolts, additional allowance of 10 per cent for full container quantities.

On all of the above items there is an additional 5 per cent allowance for carload shipments.

Semi-fin. hexagon nuts U.S.S. S.A.E.  
½ in. and smaller ..... 66 70  
9/16 to 1 in. .... 63 65  
1½ in. through 1½ in. .... 61 62  
1½ in. and larger ..... 60

In full container lots, 10 per cent additional discount.

Stove bolts, packages, nuts loose 73 and 100

Stove bolts in packages, with nuts attached ..... 73  
Stove bolts in bulk ..... 81

On stove bolts freight allowed up to 65c. per 100 lb. based on Cleveland, Chicago, New York, lots of 200 lb. or over.

### Large Rivets

(½ in. and larger)

*Base per 100 Lb.*

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham ..... \$3.40

### Small Rivets

(7/16 in. and smaller)

*Per Cent Off List*

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham ..... 65 and 10

### Cap and Set Screws

*Per Cent Off List*

Milled hexagon head, cap screws, 1 in. dia. and smaller ..... 50  
Milled headless set screws, cut thread ¼ in. and larger ..... 64  
3/16 in. and smaller ..... 73  
Upset hex. head cap screws U.S.S. or S.A.E. thread 1 in. and smaller ..... 68  
Upset set screws, cup and oval points ..... 74  
Milled studs ..... 52

Freight allowed up to 65c. per 100 lb. based on Cleveland, Chicago or New York on lots of 200 lb. or over.

## NON-FERROUS PRICES

*Cents per lb. for early delivery*

	Jan. 22	Jan. 23	Jan. 24	Jan. 25	Jan. 27	Jan. 28
Copper, Electrolytic¹	12.00	12.00	12.00	12.00	12.00	12.00
Copper, Lake	12.00	12.00	12.00	12.00	12.00	12.00
Tin, Straits, New York	50.15	50.15	50.20	50.20	50.20	50.20
Zinc, East St. Louis	7.25	7.25	7.25	7.25	7.25	7.25
Lead, St. Louis³	5.35	5.35	5.35	5.35	5.35	5.35

¹ Mine producers' quotations only, delivered Conn. Valley. Deduct ¼c. for approximate New York delivery price. ² Add 0.39c. for New York delivery. ³ Add 0.15c. for New York delivery.

### Warehouse Products

*Cents per lb., Delivered*

	New York	Cleveland
Tin		
Straits pig	51.25	53.75
Copper		
Electro	12.75	13.50
Castings	12.50	13.00
H. R. Sheets*	20.12	20.12
Seamless tubes*	20.62	20.62
Brass		
Yellow sheets*	18.65	18.65
Yellow, rods*	13.67	13.67
Seamless tubes*	21.40	21.40
Zinc		
Slabs	Nom'al	Nom'al
Sheet, No. 9 casks	13.50	Nom'al
Lead		
American pig	6.50	6.00
Bar	8.45	8.50
Cut sheets	8.80	8.75
Antimony		
Asiatic	16.00	17.00
Aluminum		
Virgin, 99%	20.00	21.00
No. 1 remelt., 98-99%	18.00	18.50
Solder		
½ and ½	30.750	32.00
Babbitt		
Anti-friction grade	23.50	21.50

### Old Metals

*Cents per lb., New York*

*Buying prices are paid by dealers for miscellaneous lots from smaller accumulators. Selling prices are those charged to consumers after the metal has been prepared for their use.*

	Dealers' Buying Prices	Dealers' Selling Prices
Copper		
Hvy. crucible	10.00	10.625
Hvy. and wire	9.00	9.40
Light and bottoms	8.00	8.50
Brass		
Heavy	5.750	6.255
Light	4.750	5.50
No. 1 yel. turn.	5.50	6.50
No. 1 red or compo. turnings	9.00	10.00
Hvy. Mach. compo.	9.25	9.625
Lead		
Heavy	4.50	5.00
Aluminum		
Cast	Nom'l	Nom'l
Sheet	Nom'l	Nom'l
Zinc	Nom'l	Nom'l

### Miscellaneous Non-Ferrous Prices

ALUMINUM, delivered: virgin, 99 per cent plus, 17c.-18c. a lb.; No. 12 remelt No. 2, standard, 17-17.50c. a lb. NICKEL electrolytic, 35c.-36c. a lb. base refinery, lots of 2 tons or more. ANTIMONY, prompt: Asiatic, 16.50c. a lb., New York; American, 13c. a lb., f.o.b. smelter. QUICK-SILVER, \$169 per flask of 76 lb. BRASS INGOTS, commercial 85-5-5-5, 13.25c. a lb.

\*These prices, which are also for delivery from Chicago warehouses, are quoted with the following percentages allowed off for extras: on copper sheets, 33%; on brass sheets and rods, 40; on brass tubes, 33½, and copper tubes, 40.



## PRICES

### ALLOY STEEL

#### Alloy Steel Blooms, Billets and Slabs

Base per gross ton, f.o.b. Pittsburgh, Chicago, Canton, Massillon, Buffalo or Bethlehem.....\$54.00

#### Alloy Steel Bars

Base per pound, f.o.b. Pittsburgh, Chicago, Buffalo, Bethlehem, Massillon or Canton.

Open-hearth grade..... 2.70c.  
Delivered, Detroit..... 2.80c.

S.A.E. Series Numbers Alloy Differential, per 100 Lb.  
2000 (1.5 Ni).....\$0.35

2100 (1.5 Ni) .....	0.75
2300 (3.5 Ni) .....	1.70
2500 (5 Ni) .....	2.55
3100 Ni-Cr .....	0.70
3200 Ni-Cr .....	1.35
3300 Ni-Cr .....	3.80
3400 Ni-Cr .....	3.20
4100 Cr-Mo (0.15 to 0.25 Mo.) ..	0.55
4100 Cr-Mo (0.25 to 0.40 Mo.) ..	0.75
x4340 Cr-Ni-Mo .....	1.70
4340 Cr-Ni-Mo .....	1.85
4600 Ni-Mo (0.2-0.3 Mo, 1.5-2 Ni)	1.20
5100 (0.60-0.90 Cr) .....	0.35
5100 (0.80-1.10 Cr) .....	0.45
5100 Cr spring steel .....	0.15
52-100 Cr. (electric furnace) ..	2.60
6100 Cr-V bar .....	1.20

6100 Cr-V spring steel.....	0.85
C-V .....	0.85

The above differentials are for hot rolled finished products. The differential for most grades in electric furnace steel is 50c. higher. Slabs with a section area of 16 in. and 2½ in. thick or over take the billet base.

#### Alloy Cold-Finished Bars

Base per pound, f.o.b. Pittsburgh, Chicago, Gary, Cleveland or Buffalo, 3.35c. Delivered Detroit, 3.45c. carlots.

#### Alloy Steel Plates

Base per lb., f.o.b. Pittsburgh, Chicago and Coatesville.  
Open hearth grade .....3.50c.

### STAINLESS AND HEAT-RESISTANT ALLOYS

(Base prices, cents per lb., f.o.b. Pittsburgh)

#### Chromium-Nickel

No.	304	302
Forging billets .....	21.25c.	20.40c.
Bars .....	25.00c.	24.00c.
Plates .....	29.00c.	27.00c.
Structural shapes .....	25.00c.	24.00c.
Sheets .....	36.00c.	34.00c.
Hot rolled strip.....	23.50c.	21.50c.
Cold rolled strip.....	30.00c.	28.00c.
Drawn wire .....	25.00c.	24.00c.

#### Straight-Chromium

No.	410	430	442	446
Bars .....	18.50c.	19.00c.	22.50c.	27.50c.
Plates .....	21.50c.	22.00c.	25.50c.	30.50c.
Sheets .....	26.50c.	29.00c.	32.50c.	36.50c.
H'tstrip .....	17.00c.	17.50c.	24.00c.	35.00c.
C'd st. .....	22.00c.	22.50c.	32.00c.	52.00c.

### TOOL STEEL

(F.o.b. Pittsburgh)

	Base per Lb.
High speed .....	67c.
High-carbon-chromium .....	43c.
Oil-hardening .....	24c.
Special .....	22c.
Extra .....	18c.
Regular .....	14c.

Prices for warehouse distribution to all points on or East of Mississippi River are 2c. a lb. higher. West of Mississippi quotations are 3c. a lb. higher.

### ELECTRICAL SHEETS

(F.o.b. Pittsburgh)

	Base per Lb.
Field grade .....	3.20c.
Armature .....	3.55c.
Electrical .....	4.05c.
Motor .....	4.95c.
Dynamo .....	5.65c.
Transformer 72 .....	6.15c.
Transformer 65 .....	7.15c.
Transformer 58 .....	7.65c.
Transformer 52 .....	8.45c.

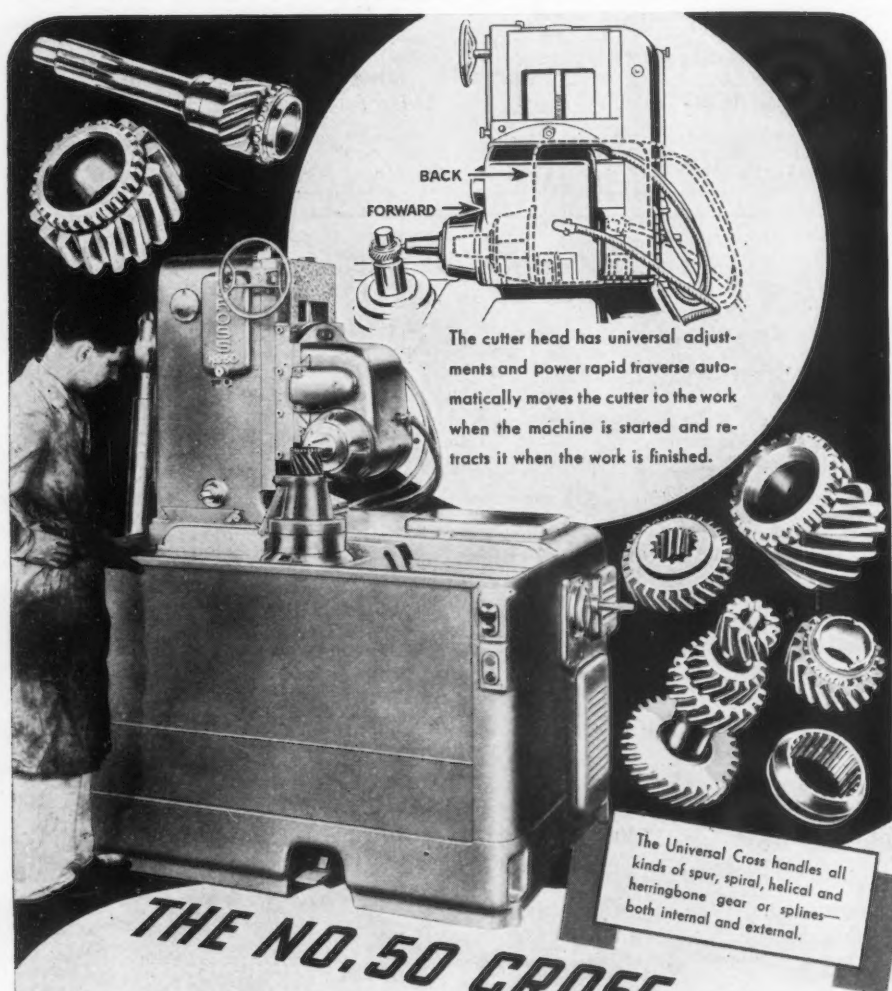
Silicon strip in coils—Sheet price plus silicon sheet extra width extra plus 25c. per 100 lb. for coils. Pacific ports add 70c. a 100 lb.

### CAST IRON WATER PIPE

Per Net Ton

6-in. and larger, del'd Chicago ..	\$54.80
6-in. and larger, del'd New York ..	52.20
6-in. and larger, Birmingham ..	46.00
6-in. and larger f.o.b. dock, San Francisco or Los Angeles or Seattle .....	56.00

Class "A" and gas pipe, \$3 extra; 4-in. pipe is \$3 a ton above 6-in. Prices shown are for lots of less than 200 tons. For 200 tons and over, 6-in. and larger is \$45 at Birmingham and \$53.80 delivered Chicago.



## THE NO. 50 CROSS

A Universal Gear Chamfering Machine for producing any form on internal and external gear teeth with a "pencil-point" cutter. Spur, helical, herringbone or, gears with relieved teeth are all chamfered with equal ease. Can be tooled economically for quick set-up and automatic operation.

Literature upon Request.

**CROSS GEAR & MACHINE CO.**  
Established in 1898  
DETROIT, MICHIGAN, U.S.A.



## PRICES

### BOILER TUBES

Seamless Steel and Lap Weld Commercial  
Boiler Tubes and Locomotive Tubes.  
Minimum Wall

(Net base prices per 100 ft., f.o.b. Pitts-  
burgh, in carload lots)

	Lap Seamless Weld, Cold Hot Hot Drawn Rolled Rolled	
1 in. o.d. 13 B.W.G.	\$9.01 \$7.82	....
1 1/4 in. o.d. 13 B.W.G.	10.67 9.26	....
1 1/2 in. o.d. 13 B.W.G.	11.70 10.23	\$9.72
1 3/4 in. o.d. 13 B.W.G.	13.42 11.64	11.06
2 in. o.d. 13 B.W.G.	15.03 13.04	12.38
2 1/4 in. o.d. 13 B.W.G.	16.76 14.54	13.79
2 1/2 in. o.d. 12 B.W.G.	18.45 16.01	15.16
2 3/4 in. o.d. 12 B.W.G.	20.21 17.54	16.58
3 in. o.d. 12 B.W.G.	21.42 18.59	17.54
3 1/2 in. o.d. 11 B.W.G.	22.48 19.50	18.35
4 in. o.d. 11 B.W.G.	28.37 24.62	23.15
4 1/2 in. o.d. 10 B.W.G.	35.20 30.54	28.66
5 in. o.d. 10 B.W.G.	43.04 37.35	35.22
5 1/2 in. o.d. 9 B.W.G.	54.01 46.87	44.25
6 in. o.d. 7 B.W.G.	82.93 71.96	68.14

Extras for less carload quantities:

40,000 lb. or ft. over	Base
30,000 lb. or ft. to 39,999 lb. or ft.	5%
20,000 lb. or ft. to 29,999 lb. or ft.	10%
10,000 lb. or ft. to 19,999 lb. or ft.	20%
5,000 lb. or ft. to 9,999 lb. or ft.	30%
2,000 lb. or ft. to 4,999 lb. or ft.	45%
Under 2,000 lb. or ft.	65%

### STEEL AND WROUGHT IRON PIPE AND TUBING

#### Welded Pipe

Base Discounts, f.o.b. Pittsburgh District  
and Lorain, Ohio, Mills

(F.o.b. Pittsburgh only on wrought iron  
pipe)

Base Price = \$200 Per Net Ton

#### Butt Weld

Steel	Black	Galv.
1/8 in.	56	36
1/4 to 3/8 in.	59	43 1/2
1/2 in.	63 1/2	54
3/4 in.	66 1/2	58
1 to 3 in.	68 1/2	60 1/2

#### Wrought Iron

	Black	Galv.
1/4 and 3/8 in.	+9	+10
1/2 in.	24	6 1/2
3/4 in.	30	13
1 and 1 1/4 in.	34	19
1 1/2 in.	38	21 1/2
2 in.	37 1/2	21

#### Lap Weld

Steel		
2 in.	61	52 1/2
2 1/2 and 3 in.	64	55 1/2
3 1/2 to 6 in.	66	57 1/4
7 and 8 in.	65	55 1/2
9 and 10 in.	64 1/2	55
11 and 12 in.	63 1/2	54

#### Wrought Iron

2 in.	30 1/2	15
2 1/2 to 3 1/2 in.	31 1/2	17 1/2
4 in.	33 1/2	21
4 1/2 to 8 in.	32 1/2	20
9 to 12 in.	28 1/2	15

#### Butt weld, extra strong, plain ends

Steel	Black	Galv.
1/8 in.	54 1/2	41 1/2
1/4 to 3/8 in.	56 1/2	45 1/2
1/2 in.	61 1/2	53 1/2
3/4 in.	65 1/2	57 1/2
1 to 3 in.	67	60

#### Wrought Iron

1/4 and 3/8 in.	+10	+43
1/2 in.	25	9
3/4 in.	31	15
1 to 2 in.	38	22 1/2

#### Lap weld, extra strong, plain ends

Steel		
2 in.	59	51 1/2
2 1/2 and 3 in.	63	55 1/2
3 1/2 to 6 in.	66 1/2	59

	Black	Galv.
7 and 8 in.	65 1/2	56
9 and 10 in.	64 1/2	55
11 and 12 in.	63 1/2	54

#### Wrought Iron

2 in.	33 1/2	18 1/2
2 1/2 to 4 in.	39	25 1/2
4 1/2 to 6 in.	37 1/2	24
7 and 8 in.	38 1/2	24 1/2
9 to 12 in.	32	20 1/2

On butt weld and lap weld steel pipe  
jobbers are granted a discount of 5%. On  
less-than-carload shipments prices are de-  
termined by adding 25 and 30% and the  
carload freight rate to the base card.

F.o.b. Gary prices are two points lower  
discount or \$4 a ton higher than Pitts-  
burgh or Lorain on lap weld and one  
point lower discount, or \$2 a ton higher,  
on all butt weld 8 in. and smaller.



## This crane rope has EXTRA STAMINA...

because it has TWO different kinds of wire

**A. Extra-Flexible Inner Wires** in every Monarch Whyte Strand **PRE**formed line are improved plow steel, designed to fight internal friction caused by continuous bending.

**B. Extra-Tough Outer Wires** in Monarch Whyte Strand are also improved plow steel specially drawn for outside service. They resist corrosion, abuse, and abrasion.

And around both wires and strands is a specially formulated Macwhyte lubricant to protect the unseen inside wires against damaging and costly internal friction.

## MACWHYTE CRANE ROPES

The correct ropes for your equipment  
PREFORMED FOR PERFORMANCE



## THESE BRAIDED SLINGS SPEED HANDLING.. SAFELY

... because they're made from left-&-right lay  
endless wire ropes.

Their left-&-right lay endless rope construction (patented) makes these Macwhyte slings extremely flexible ... light-weight ... easy to handle ... kink-resistant ... non-spinning ... SAFE.

Swiftly, safely they take the load up and away. Each Rope (eight of them) carries its full share of the load, thanks to the continuous uniform spiral braiding of the endless ropes.

SPEED YOUR DEFENSE  
CONTRACTS SAFELY WITH



For complete information, prices and data on wire ropes and slings ask  
your Macwhyte distributor or write to

MACWHYTE COMPANY • 2911 Fourteenth Avenue • Kenosha, Wis.  
New York • Pittsburgh • Chicago • Ft. Worth • San Francisco  
Portland • Seattle • Distributors throughout the U. S. A.

Manufacturers of Rope Wire, Braided Wire Rope Slings—Monel Metal and Stainless Steel Wire Rope—Aircraft Cable  
—"Safe-Lock" Cable Terminals—Aircraft Tie Rods—and Wire Ropes for all requirements



## PRICES

### ORES

#### Lake Superior Ores

Delivered Lower Lake Ports

	Per Gross Ton
Old range, bessemer, 51.50%...	\$4.75
Old range, non-bessemer, 51.50%	4.60
Mesaba, bessemer, 51.50%.....	4.60
Mesaba, non-bessemer, 51.50%..	4.45
High phosphorus, 51.50%.....	4.35

#### Foreign Ores\*

C.i.f. Philadelphia or Baltimore,  
Exclusive of Duty

	Per Unit
Algerian, low P, Cu free, dry, 55 to 58% Fe .....	Nom.

Caucasian, washed, 52% Mn....	Nom.
African, Indian, 44 to 48% Mn....	50c.
African, Indian, 49 to 51% Mn....	54c.
Brazilian, 46 to 48% Mn.....	50c.
Cuban, del'd, duty free, 51% Mn..	68c.

Per Short Ton Unit

Tungsten, Chinese, Wolframite, duty paid, delivered ....	\$23 to \$24
Tungsten, domestic, scheelite, delivered .....	\$23.00
Chrome ore, lump c.i.f. Atlantic Seaboard, per gross ton: South African (low grade).....	Nom.
Rhodesian, 45% .....	\$23.50
Rhodesian, 48% .....	27.50

### RAILS, TRACK SUPPLIES

F.o.b. Mill

Standard rails, heavier than 60 lb., gross ton .....	\$40.00
Angle bars, 100 lb. ....	2.70

F.o.b. Basing Points

Light rails (from billets), gross ton .....	\$40.00
Light rails (from rail steel), gross ton .....	39.00

Base per lb.

Cut spikes .....	3.00c.
Screw spikes .....	4.55c.
Tie plates, steel .....	2.15c.
Tie plates, Pacific Coast.....	2.30c.
Track bolts, steam railroads ..	4.15c.
Track bolts, discount to jobbers all sizes (per 100 counts)....	65-5

Basing points, light rails—Pittsburgh, Chicago, Birmingham; spikes and tie plates—Pittsburgh, Chicago, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minneapqua, Colo., Birmingham and Pacific Coast ports; tie plates alone—Steelton, Pa., Buffalo; spikes alone—Youngstown, Lebanon, Pa., Richmond, Va.

### FLUORSPAR

Per Net Ton

Domestic washed gravel, 85-5 f.o.b. Kentucky and Illinois mines, all rail....	\$20.00 to \$21.00
Domestic, f.o.b. Ohio River land- ing barges .....	20.00 to 21.00
No. 2 lump, 85-5 f.o.b. Kentucky and Illinois mines .....	20.00 to 21.00
Foreign, 85% calcium fluoride, not over 5% Si., c.i.f. Atlantic ports, duty paid .....	Nominal
Domestic No. 1 ground bulk, 96 to 98%, calcium fluoride, not over 2½% silicon, f.o.b. Illi- nois and Kentucky mines....	31.00
As above, in bags, f.o.b. same mines .....	32.60

### REFRACTORIES

Fire Clay Brick Per 1000 f.o.b. Works

Super-duty brick at St. Louis..	\$60.80
First quality Pennsylvania, Maryland, Kentucky, Missouri and Illinois .....	47.50
First quality, New Jersey.....	52.50
Second quality, Pennsylvania, Maryland, Kentucky, Mis- souri and Illinois .....	42.75
Second quality, New Jersey..	49.00
No. 1 Ohio .....	39.90
Ground fire clay, per ton .....	7.10

#### Silica Brick

Pennsylvania .....	\$47.50
Chicago District .....	55.10
Birmingham .....	47.50
Silica cement, net ton (Eastern)	8.55

#### Chrome Brick

Net per Ton

Standard f.o.b. Baltimore, Plym- outh Meeting and Chester ..	\$50.00
Chemically bonded f.o.b. Balti- more, Plymouth Meeting and Chester, Pa. ....	

#### Magnesite Brick

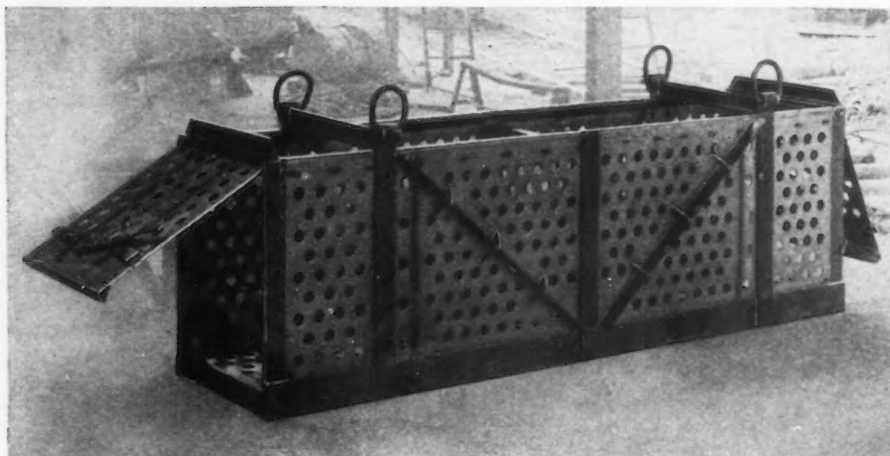
Standard f.o.b. Baltimore and Chester .....	\$72.00
Chemically bonded, f.o.b. Balti- more .....	61.00

#### Grain Magnesite

Imported, f.o.b. Baltimore and Chester, Pa. (in sacks) .....	(—)*
Domestic, f.o.b. Baltimore and Chester in sacks .....	\$40.00
Domestic, f.o.b. Chewelah, Wash. (in bulk) .....	22.00

\*None available.

## LIGHTWEIGHT *all-welded Crate*



## made from ROD, BAR and PLATE

**This type of design made possible by the strength and corrosion resistance of Monel . . .**

Just because pickling acids and abuse in service play hob with equipment, you don't have to make it heavy. On the contrary, here is an example of rugged strength built into a lightweight crate:

Fabricated by Youngstown Welding and Engineering Company of Youngstown, Ohio, this crate is 11½ ft. long, 2½ ft. wide, and over 3 ft. high. Sides and ends are ¼ inch thick, bottom ⅜ inch. The whole crate is made from standard mill forms employing all-welded construction.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 Wall Street, New York, N. Y.



# MONEL

"Monel" is a registered trade-mark of The International Nickel Company, Inc., which is applied to a nickel alloy containing approximately two-thirds nickel and one-third copper.

What is the metal? It's Monel . . . the alloy that resists corrosion by pickling acids and so retains its strength. Available in all standard mill forms and easily fabricated into crates and other pickling accessories, Monel assures years of service. And because Monel equipment is lighter in weight, your payloads are bigger, repair and maintenance bills smaller.

How you can take advantage of lightweight Monel construction is told in detail in "Equipment Designs for the Pickle House," "Where Monel pays its Way in Pickling," and "A Good Start to a Better Finish." This literature is free. Write for it today. Address:



## PRICES

### FERROALLOYS

#### Ferromanganese

F.o.b. New York, Philadelphia, Baltimore, Mobile or New Orleans.

*Per Gross Ton*

Domestic, 80% (carload).....\$120.00

#### Spiegeleisen

*Per Gross Ton Furnace*

Domestic, 19 to 21%.....\$36.00

Domestic, 26 to 28%.....49.50

#### Electric Ferrosilicon

*Per Gross Ton, Delivered, Lump Size*

50% (carload lots, bulk).....\$74.50\*

50% (ton lots, packed).....87.00\*

75% (carload lots, bulk).....135.00\*

75% (ton lots, packed).....151.00\*

#### Bessemer Ferrosilicon

*Per Gross Ton, F.o.b. Jackson, Ohio*

10.00 to 10.50%.....\$34.50

For each additional 0.50% silicon up to 12%, 50c. per ton is added. Above 12% add 75c. per ton.

For each unit of manganese over 2% \$1 per ton additional.

Base prices at Buffalo are \$1.25 a ton higher than at Jackson.

#### Silvery Iron

*Per Gross Ton, F.o.b. Jackson, Ohio*

5.00 to 5.50%.....\$28.50

For each additional 0.5% silicon up to 12%, 50c. a ton is added. Above 12% add 75c. a ton.

The lower all-rail delivered price from Jackson or Buffalo is quoted with freight allowed. Base prices at Buffalo are \$1.25 a ton higher than at Jackson.

Manganese, each unit over 2%, \$1 a ton additional. Phosphorus 0.75% or over, \$1 a ton additional.

#### Ferrochrome

*Per Lb. Contained Cr., Delivered Carlots Lump Size, on Contract*

4 to 6% carbon.....11.00c.

2% carbon.....17.50c.

1% carbon.....18.50c.

0.10% carbon.....20.50c.

0.06% carbon.....21.00c.

Spot prices are ¼c. per lb. of contained chromium higher.

#### Silico-Manganese

*Per Gross Ton, Delivered, Lump Size, Bulk, on Contract*

3% carbon.....\$113.00\*

2.50% carbon.....118.00\*

2% carbon.....123.00\*

1% carbon.....133.00\*

#### Other Ferroalloys

Ferrotungsten, per lb. contained W, del. carload.....\$2.00

Ferrotungsten, 100 lb. and less.....2.25

Ferrovandium, contract, per lb. contained V, del'd \$2.70 to \$2.90†

Ferrocolumbium, per lb. contained columbium, f.o.b. Niagara Falls, N. Y., ton lots.....\$2.25†

Ferrocobaltititanium, 15 to 18% Ti, 7 to 8% C, f.o.b. furnace, carload and contract, per net ton.....\$142.50

Ferrocobaltititanium, 17 to 20% Ti, 3 to 5% C, f.o.b. furnace, carload and contract per net ton.....\$157.50

\*Spot prices are \$5 per ton higher.  
†Spot prices are 10c. per lb. of contained element higher.

Ferrophosphorus, electric or blast furnace material, in carloads, f.o.b. Anniston, Ala., for 18%, with \$3 unitage, freight equalized with Rockdale, Tenn., per gross ton.....58.50

Ferrophosphorus, electrolytic 23-26% in carlots, f.o.b. Monsato (Siglo), Tenn., 24%, per gross ton, \$3 unitage, freight equalized with Nashville.....75.00

Ferromolybdenum, per lb. Mo, f.o.b. furnace.....95c.

Calcium molybdate, per lb. Mo, f.o.b. furnace.....80c.  
Molybdenum oxide briquettes 48-52% Mo, per lb. contained Mo, f.o.b. Langeloth, Pa. 80c.

### FUEL OIL

No. 3, f.o.b. Bayonne, N. J.....4.50c.  
No. 6, f.o.b. Bayonne, N. J.....2.98c.  
No. 5 Bur. Stds., del'd Chicago.....3.25c.  
No. 6 Bur. Stds., del'd Chicago.....2.75c.  
No. 3 distillate, del'd Cleveland.....5.50c.  
No. 4 industrial, del'd Cleveland 5.00c.  
No. 5 industrial, del'd Cleveland 4.75c.  
No. 6 industrial, del'd Cleveland 4.50c.



## PARISH STAMPINGS *Travel Light*

**CARLINE BRACKET** — Used for connection between side posts and roof carlines in body frame construction of present type trailers.

Buses, trailers, railroad cars, and all transportation units, earn dividends through light weight construction. This is made possible by using high

strength, corrosion resistance stampings.

To witness:—These brackets made by Parish are of .050" Ga. and 3/16" High Tensile Steel. They bring sturdy endurance, increased pay-load capacity to trailers.

Parish engineers can bring an added value to your product. Let us show you how.



### PARISH PRESSED STEEL CO.

READING, PENNA.

Pacific Coast Representative  
F. Somers Peterson Co.,  
57 California St.,  
San Francisco, California



**SPRING BRACKET** — For trailer, made of several pressed steel plates welded to form the assembly shown. Lighter and Stronger



# PRICES

## COKE

Per Net Ton

Furnace, f.o.b. Connellsville, prompt	\$5.25 to \$5.75
Foundry, f.o.b. Connellsville, prompt	\$5.50 to \$6.00
F'dry, by-product, Chicago	10.50
F'dry, by-product, New England	13.00
Foundry, by-product, Newark or Jersey City	\$11.30 to \$11.90
F'dry, by-product, Philadelphia	11.13
F'dry, by-product, Cleveland	11.55
F'dry, by-product, Cincinnati	11.00
Foundry, Birmingham	7.50
F'dry, by-product, St. Louis	\$10.75 to \$11.00
Foundry, from Birmingham, f.o.b. cars dock Pacific ports	\$14.75

## BRITISH

British

Per Gross Ton, f.o.b. United Kingdom Ports

Ferromanganese, export	£29 16s. 3d.
Tin plate, per base box	32s. to 33s.
Steel bars, open hearth	£16 10s.
Beams, open hearth	£15 8s.
Channels, open hearth	£15 8s.
Angles, open hearth	£15 8s.

Black sheets, No. 24, gage  
£22 5s. max.\* £22 5s. min.\*\*

Galvanized sheets, No. 24 gage  
£25 12s. 6d. max.\*; £25 12s. 6d. min.\*\*

\*Empire markets only.

\*\*Other than Empire markets.

## PIG IRON (Per Gross Ton)

Prices delivered various consuming points indicated by bold italics

	No. 2 Foundry	Basic	Bessemer	Malleable	Low Phos.
Boston	<b>\$25.50</b>	<b>\$25.00</b>	<b>\$26.50</b>	<b>\$26.00</b>	.....
Brooklyn	<b>27.50</b>	.....	.....	<b>28.00</b>	.....
Jersey City	<b>26.53</b>	<b>26.03</b>	<b>27.53</b>	<b>27.03</b>	.....
Philadelphia	<b>25.84</b>	<b>25.34</b>	<b>26.84</b>	<b>26.34</b>	.....
Bethlehem, Pa.	\$25.00	\$24.50	\$26.00	\$25.50	.....
Everett, Mass.	25.00	24.50	26.00	25.50	.....
Swedeland, Pa.	25.00	24.50	26.00	25.50	.....
Steelton, Pa.	.....	24.50	.....	.....	28.50
Birdsboro, Pa.	25.00	24.50	26.00	25.50	28.50
Sparrows Point, Md.	25.00	24.50	.....	.....	.....
Erie, Pa.	24.00	23.50	25.00	24.50	.....
Neville Island, Pa.	24.00	23.50	24.50	24.00	.....
Sharpsville, Pa.††	24.00	23.50	24.50	24.00	.....
Buffalo	24.00	23.00	25.00	24.50	28.50
Cincinnati	<b>24.44</b>	<b>24.61</b>	.....	<b>25.11</b>	.....
Canton, Ohio	<b>25.39</b>	<b>24.89</b>	<b>25.89</b>	<b>25.39</b>	.....
Mansfield, Ohio	<b>25.94</b>	<b>25.44</b>	<b>26.44</b>	<b>25.94</b>	.....
St. Louis	<b>24.50</b>	<b>24.02</b>	.....	.....	.....
Chicago	24.00	23.50	24.50	24.00	.....
Granite City, Ill.	24.00	23.50	24.50	24.00	.....
Cleveland	24.00	23.50	24.50	24.00	.....
Hamilton, Ohio	24.00	23.50	.....	24.00	.....
Toledo	24.00	23.50	24.50	24.00	.....
Youngstown††	24.00	23.50	24.50	24.00	.....
Detroit	24.00	23.50	24.50	24.00	.....
St. Paul	<b>26.63</b>	.....	<b>27.13</b>	<b>26.63</b>	.....
Duluth	24.50	.....	25.00	24.50	.....
Birmingham	19.38*	18.00	24.00	.....	.....
Los Angeles, San Francisco and Seattle	<b>27.50</b>	.....	.....	.....	.....
Provo, Utah	22.00	.....	.....	.....	.....
Montreal†	27.50	27.50	.....	28.00	.....
Toronto†	25.50	25.50	.....	26.00	.....

## GRAY FORGE

Valley or Pittsburgh fce.....\$23.50

## CHARCOAL

Lake Superior fce.....\$27.00  
Delivered Chicago ..... 30.34

Base prices are subject to an additional charge for delivery within the switching limits of the respective districts.

\*Delivered prices on Southern iron for shipment to Northern points are 38c. a ton below delivered prices from nearest Northern basing point on iron with phosphorus content of 0.70 per cent and over. †On all grades 2.25 per cent silicon and under is base. For each 25 points of silicon over 2.25 per cent an extra of 25c. is charged.

## WAREHOUSE PRICES

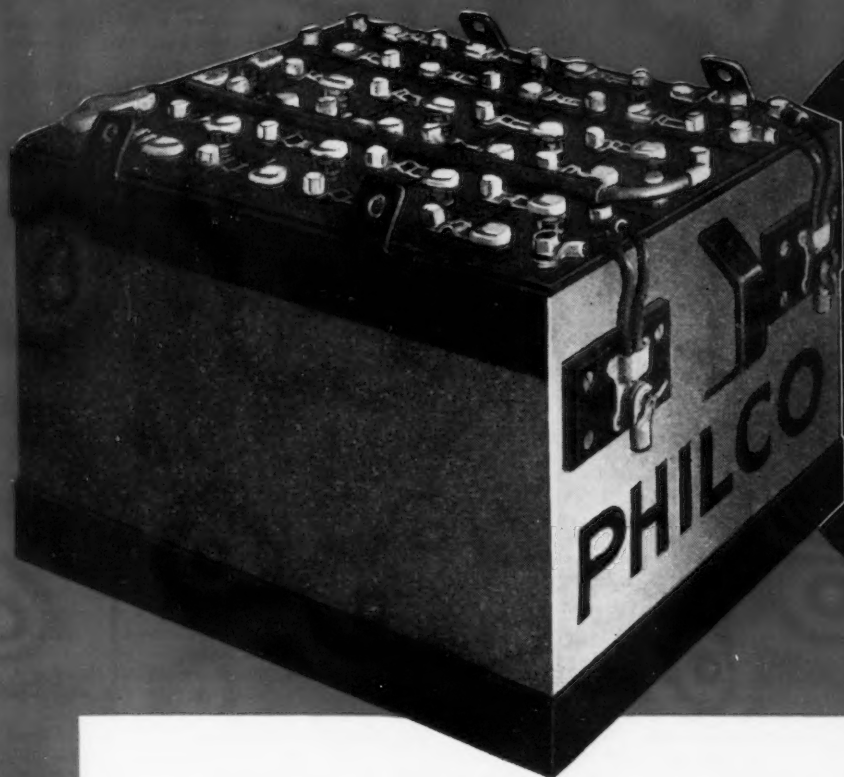
(Base Prices, Dollars per 100 lb., Delivered Metropolitan Areas)

	Pitts- burgh	Chicago	Cleve- land	Phila- delphia	New York	Detroit	Buffalo	Boston	Birm- ingham	St. Louis	St. Paul	Mil- waukee	Los Angeles
Sheets, hot rolled	\$3.35	\$3.05	\$3.35	\$3.55	\$3.58	\$3.23	\$3.25	\$3.51	\$3.45	\$3.19	\$3.30	\$3.48	\$4.30
Sheets, cold rolled	.....	4.10	4.05	4.05	4.40	4.30	4.30	4.58	.....	4.12	4.35	4.43	6.50
Sheets, galvanized	4.75	4.60	4.62	4.90	5.00	4.64	4.75	5.11	4.75	4.95	4.75	4.98	5.25
Strip, hot rolled	3.60	3.40	3.50	3.95	3.96	3.48*	3.82	3.86	3.70	3.54	3.65	3.73	.....
Strip, cold rolled	3.20	3.30	3.20	3.31	3.51	3.20	3.22	3.26	.....	3.41	3.83	3.54	.....
Plates	3.40	3.55	3.40	3.55	3.76	3.60	3.62	3.85	3.35	3.47	3.80	3.68	4.00
Structural shapes	3.40	3.55	3.58	3.55	3.75	3.65	3.40	3.85	3.55	3.69	3.80	3.68	4.15
Bars, hot rolled	3.35	3.50	3.25	3.85	3.84	3.43	3.35	3.98	3.50	3.64	3.75	3.63	4.15
Bars, cold finished	3.65	3.75	3.75	4.06	4.09	3.80	3.75	4.13	4.43	4.02	4.34	3.88	6.60
Bars, ht. rld. SAE 2300	7.20	7.10	7.55	7.31	7.60	7.42	7.35	7.50	.....	7.47	7.45	7.33	9.40
Bars, ht. rld. SAE 3100	5.75	5.65	5.85	5.86	5.90	5.97	5.65	6.05	.....	6.02	6.00	5.88	8.55
Bars, cd. drn. SAE 2300	8.15	8.15	8.15	8.56	8.84	8.45	8.40	8.63	.....	8.52	8.84	8.38	10.65
Bars, cd. drn. SAE 3100	6.75	6.75	6.75	7.16	7.19	7.05	6.75	7.23	.....	7.12	7.44	6.98	9.80

BASE QUANTITIES: Hot rolled sheets, cold rolled sheets, hot rolled strip, plates, shapes and hot rolled bars, 400 to 1999 lb.; galvanized sheets, 150 to 1499 lb.; cold rolled strip, extras apply on all quantities; cold finished bars, 1500 lb. and over; SAE bars, 1000 lb. and over. Exceptions: Chicago, galvanized sheets, 500 to 1499 lb.; Philadelphia, galvanized sheets, one to nine bundles, cold rolled sheets, 1000 to 1999 lb.; Detroit, galvanized sheets, 500 to 1499 lb.; Buffalo, cold rolled sheets, 500 to 1500 lb., galvanized sheets, 450 to 1499 lb.; Boston, cold rolled and galvanized sheets, 450 to 3749 lb.; Birmingham, hot rolled sheets, strip and bars, plates and shapes, 400 to 3999 lb., galvanized sheets, 500 to 1499 lb.; St. Louis, cold rolled sheets, 400 to 1499 lb., galvanized sheets, 500 to 1499 lb.; Milwaukee, cold rolled sheets, 400 to 1499 lb., galvanized sheets, 150 to 499 lb.; New York, hot rolled sheets, 0 to 1999 lb., cold rolled sheets, 400 to 1499 lb.; St. Paul, galvanized and cold rolled sheets, any quantity, hot rolled bars, plates, shapes, hot rolled sheets, 400 to 14,999 lb.; Los Angeles, hot rolled sheets, bars, plates, shapes, cold rolled sheets, 300 to 1999 lb., galvanized sheets, 150 to 1049 lb. Extras for size, quality, etc., apply on above quotations. \*12 gage and heavier, \$3.23.



# ***SPEED-UP*** Your Production with **PHILCO BATTERIES**



The Only  
Triple-Insulated  
Batteries that give you  
**10% EXTRA  
CAPACITY**  
in the same  
compartment space!

**S**PEED, speed, speed and more speed. All production schedules have been stepped up, twice as much to be produced with less time for production. Materials must be moved faster and more efficiently when you're meeting production dead-lines.

Philco Batteries in your electric trucks give you what it takes to meet the increased tempo of production. 10% EXTRA CAPACITY

in the same compartment space... ample capacity to do the entire day's work under peak conditions! Triple Insulation insures dependable, trouble-free performance with lower charging and maintenance costs.

● Investigate Philco Batteries now! Specify them for either your present trucks or for new electric trucks. Check with Philco Engineers . . . they can help you. Write:

**PHILCO, Battery Division**  
Dept. 380 Philadelphia, Pa.



# Sales Possibilities

... CONSTRUCTION, PLANT EXPANSION AND EQUIPMENT BUYING

## North Atlantic States

• **Lawson Machine & Tool Co.**, Malden, Mass., plans expansion for production of aircraft engine parts for Navy Department, for which contract has been secured. Cost about \$60,000 with equipment.

**Hood Rubber Co.**, 98 Nichols Avenue, Watertown, Mass., hard rubber goods, etc., has purchased former local plant of Walker & Pratt Mfg. Co., stoves, ranges, etc., consisting of one-story building, about 400,000 sq. ft. of floor space, and will modernize for expansion.

**Textile Finishing Machinery Co.**, Sims Avenue, Providence, R. I., has let general contract to Brooks-Skinner Co., 662 Adams Street, Quincy, Mass., for one-story addition, 100 x 200 ft., with extension, 20 x 40 ft. Cost over \$65,000 with equipment.

**Todd-Bath Iron Shipbuilding Corp.**, South Portland, Me., an interest of Todd Shipyards Corp., New York, and Bath Iron Works Corp., Bath, Me., recently organized, has let general contract to Sanders Engineering Co., 415 Congress Street, Portland, for new shipyard on local site, comprising five shipways, drydock, one-story shops, boiler house and auxiliary structures. Cost close to \$2,500,000 with equipment. It will be used for construction of steel freighters for British Government. Charles T. Main, Inc., 201 Devonshire Street, Boston, is consulting engineer.

**General Electric Co.**, Schenectady, N. Y., plans new works at Everett, Mass., for production of super-charger turbine units for War Department, consisting of two main one-story units, 400 x 500 ft., and 85 x 300 ft., and auxiliary buildings, for parts manufacture and assembling. Cost about \$5,873,000, with financing to be arranged through Government.

**Rheem Mfg. Co.**, 30 Rockefeller Plaza, New York, steel barrels, drums and other steel containers, has let general contract to Brown & Matthews, Inc., 122 East Forty-second Street, for new one-story plant at Chicago, to be operated in conjunction with present works at 3425 South Kedzie Avenue. Cost over \$700,000 with equipment.

**Remington Arms Co., Inc.**, Bridgeport, Conn., has let general contract to Morton C. Tuttle Co., Park Square Building, Boston, for one-story addition to branch plant at Iliou, N. Y., and improvements in present buildings. Cost over \$100,000 with equipment.

**Consolidated Edison Co. of New York, Inc.**, 4 Irving Place, has taken out permit for extensions and improvements in steam-electric generating station at 320-26 West 201st Street. Cost about \$500,000 with equipment. T. R. Galloway is company architect.

**American Can Co.**, 230 Park Avenue, New York, has plans for additions to branch plant at Lockwood and Clinton Streets, Houston, Tex., for expansion in manufacturing division, storage and distribution, and other service. Capacity will be approximately doubled. Cost close to \$500,000 with equipment. David M. Duller, Second National Bank Building, Houston, is engineer.

**Republic Aviation Corp.**, Farmingdale, N. Y., military and other airplanes, parts, etc., will begin superstructure soon for new one-story plant at East Farmingdale, about 500,000 sq. ft. of floor space, for which general contract recently was let to Turner Construction Co., 420 Lexington Avenue, New York. It will be used for parts production, assembling and testing of pursuit-interceptor planes and other aircraft for Army Department. Cost about \$5,210,000 with equipment.

**John McWilliams & Sons**, 934 West Side Avenue, Jersey City, N. J., steel forgings, etc., have acquired former plant of International High Speed Steel Co., Rockaway, N. J., con-

sisting of three one-story buildings on 26-acre tract, and will modernize for new plant.

**Camden Forge Co.**, Mount Ephraim Pike and Atlantic Railroad, Camden, N. J., iron and steel forgings, plans large expansion, including additional equipment, for production of heavy forgings for Navy Department, through which financing will be arranged. Cost about \$3,125,000, majority of fund to be used for new equipment.

**Harris-Hub Bed & Spring Co.**, 1315 South Fifty-fifth Court, Cicero, Chicago, metal bedsteads, furniture, etc., has purchased former plant of Carrier Corp., New Brunswick, N. J., consisting of one-story buildings of about 83,000 sq. ft. of floor space, and will modernize for new Eastern branch plant.

**Federal Shipbuilding & Dry Dock Co.**, Lincoln Highway, Kearny, N. J., plans addition to shipyard on adjoining tract of about 15 acres, now being acquired, to include new shipways, outfitting basin, machine shop, welding shop and other buildings. New yard will be used for construction of vessels for Navy Department, which will provide fund of about \$7,000,000 for project.

**Commanding Officer**, Ordnance Department, Picatinny Arsenal, near Dover, N. J., asks bids until Feb. 3 for milling machine cutter adapters and spindle adapters (Circular 1527), shell end mills (Circular 1528).

**Hardinge Brothers, Inc.**, 1418 College Avenue, Elmira, N. Y., bench lathes and parts, and other tools, has let general contract to C. H. Decker & Son, Elmira, for one-story addition, 40 x 125 ft., with extension, 60 x 60 ft. Cost over \$65,000 with equipment.

**Weber-Knapp Co.**, Chandler Street, Jamestown, N. Y., hardware, brass specialties, etc., plans one-story addition. Cost close to \$50,000 with equipment.

**New York State Electric & Gas Corp.**, Penn Yan, N. Y., plans expansion in Greenridge steam-electric generating station near Dresden, N. Y., including new generator unit and accessory equipment. Cost about \$2,000,000.

**Leeds & Northrup Co.**, 4901 Stenton Avenue, Philadelphia, electrical measuring instruments and parts, has approved plans for one-story addition. Cost close to \$50,000 with equipment. Richard Erskine, 1716 Cherry Street, is architect.

**Quartermaster Depot**, Twenty-first and Johnston Streets, Philadelphia, asks bids until Feb. 4 for steel shelving racks, with bins, etc. (Circular 669-440).

**Barler Metal Products Co.**, Goshen, Ind., metal cabinets, metal kitchen cabinets, etc., has leased part of former plant of Selden-Hahn Motor Truck Co., Allentown, Pa., about 25,000 sq. ft. of floor space, and will modernize for new branch plant.

**C. Schmidt & Sons, Inc.**, 127 Edwards Street, Philadelphia, brewer, has let general contract to A. Raymond Raff Co., 1635 West Thompson Street, for two-story addition, 60 x 100 ft., for storage and distribution. Cost close to \$60,000 with equipment. H. A. Kuljian & Co., 1518 Walnut Street, are architects and engineers.

**Bendix Aviation Corp.**, South Bend, Ind., has leased about 14 acres adjoining new branch plant at Wissahickon Avenue and Abbottsford Road, Philadelphia, soon to be placed in operation. Leased property has been lately acquired by Defense Plant Corp., Washington, a Federal agency, for production of equipment for Government. Expansion will cost over \$1,000,000 for buildings and equipment. Present plant totals about 640,000 sq. ft. of floor space.

**Bureau of Yards and Docks**, Navy Department, Washington, has let general contract to Hughes-Foulkrod Co., Schaff Building, Philadelphia, for one-story shop additions at Philadelphia Navy Yard, at \$584,100, exclusive of

equipment, to include structural and welding shops and other mechanical units.

**Duquesne Brewing Co.**, Twenty-second and Mary Streets, Pittsburgh, will begin superstructure soon for one-story addition, 65 x 100 ft., for storage and distribution, for which general contract recently was let to Alexander V. Miller, 422 Hays Avenue, general contractor. Cost close to \$50,000 with equipment.

**Constructing Quartermaster**, Court Square Building, Baltimore, asks bids until Feb. 4 for one-story automotive shop at Aberdeen Proving Grounds, Aberdeen, Md. (Circular 6210-10).

**Rustless Iron & Steel Corp.**, 3400 East Chase Street, Baltimore, has let general contract to Cummins Construction Corp., 803 Cathedral Street, for one-story plant addition for storage and distribution. Cost close to \$180,000 with equipment.

**Bureau of Supplies and Accounts**, Navy Department, Washington, asks bids until Feb. 4 for four single-spindle, motor-driven piston ring machines (Schedule 4984), anchor winches, including spare parts (Schedule 4976); until Feb. 6 for 700 forged, galvanized iron boat anchors, 1075 boat grapnels, 220 buoy grapnels (Schedule 4946) for Eastern and Western yards.

## The South

• **General Foundry & Machine Co.**, Sanford, N. C., recently organized to manufacture machinery and parts, iron and steel castings, etc., will take over and consolidate Lee Iron Works, Inc., Sanford; Cooke-Lewis Foundry Co., Greensboro, N. C., and Ward Plow Works, Inc., Fayetteville, N. C. All plants will be continued in operation and expansion carried out at Sanford plant, to include equipment for considerable increased capacity. B. L. Hallman is secretary.

**United States Engineer Office**, Charleston, S. C., asks bids until Feb. 3 for wire rope (Circular 43).

**Intercontinent Aircraft Corp.**, LeJeune Road and N. W. Thirty-sixth Street, Miami, Fla., recently organized with capital of \$1,500,000, to manufacture airplanes and parts, and now building plant at location noted, has approved plans for four one-story additions, supplementing main unit under construction. New units will be used for foundry, power press room, heat-treating department, pattern shop, paint and dope shops, all to be housed in one large structure; two one-story storage and distributing buildings, and engineering and office structure. Last noted will be air-conditioned. Entire project will cost about \$700,000 with equipment. Weed & Reeder, 1777 Biscayne Boulevard, Miami, are engineers. Bruce D. Leighton, head of Intercontinent Corp., 30 Rockefeller Plaza, New York, aircraft exports, is president.

**Williams Roofing Co.**, East Second Street, Little Rock, Ark., roofing products, has let general contract to B. W. Edwards Co., Little Rock, for new one-story plant, about 120 x 320 ft., in stockyards district, South Camden, Ark., to replace works at Waterloo, Ark., destroyed by fire a few months ago. Cost close to \$85,000 with equipment.

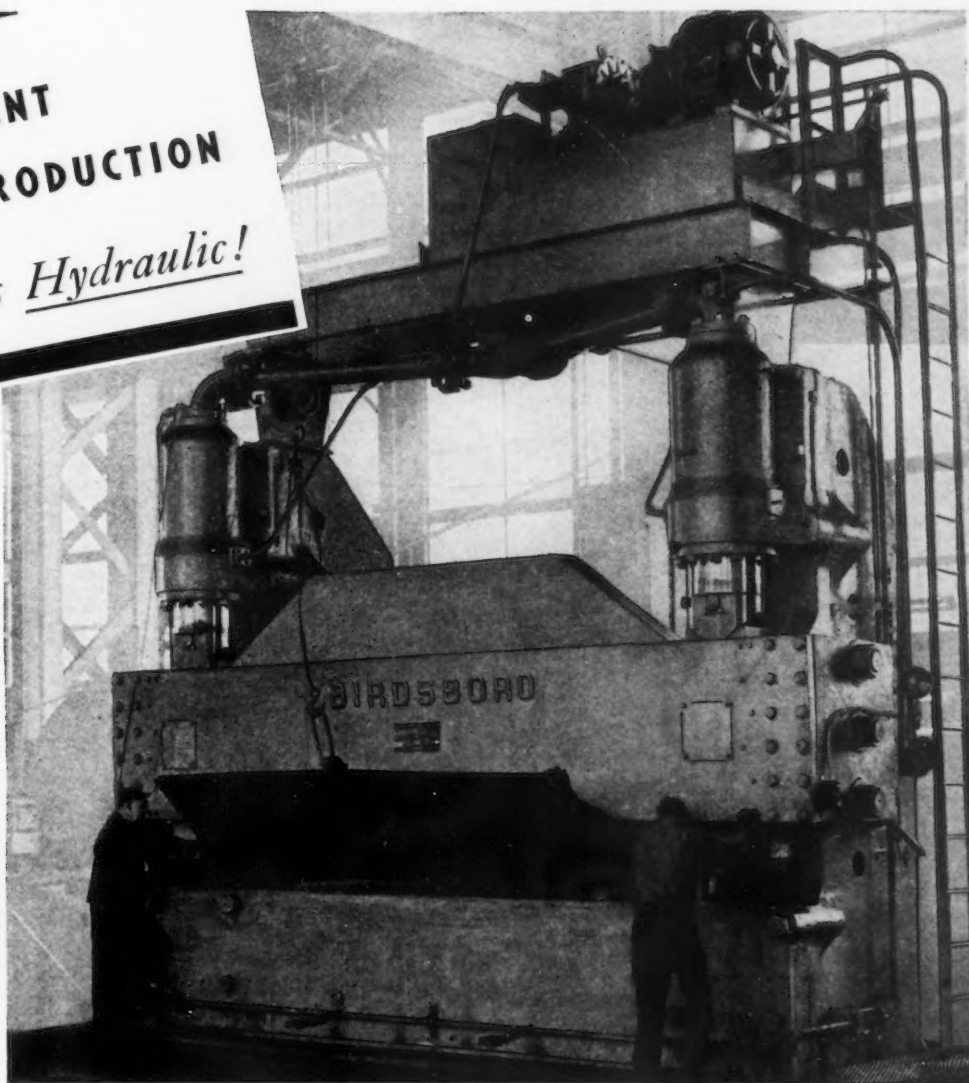
**Director of Purchases**, Tennessee Valley Authority, Knoxville, Tenn., asks bids until Feb. 3 for one oil purifying unit of combined centrifuge and filter press type, capacity not less than 600 gal. per hr.; and one lubricating oil purifying unit of centrifuge type, 375 gal. per hr. capacity, for Watts Bar hydroelectric power plant.

**Swift & Co.**, Union Stock Yards, Chicago, asks bids on general contract until Feb. 3 for new five-story and basement edible oil and lard-refining plant on Wells Street, Atlanta.



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Ga., about 60 x 110 ft. Cost over \$125,000 with equipment.

**Food Machinery Corp.,** Florida Division, Monroe Street, Dunedin, Fla., canning and packing equipment, plans new one-story plant at Lakeland, Fla., including parts production and assembling departments. Cost over \$50,000 with equipment. Main offices are at San Jose, Cal.

**Madaras Steel Corp. of Texas, Inc.,** Longview, Tex., O. H. Grissom, president, has acquired about 220 acres for new iron ore reduction mill, to operate under a special process using natural gas as fuel. Installation will include an electric furnace, traveling crane, conveyors and other mechanical-handling facilities. Cost about \$150,000 with equipment. Julius D. Madaras, inventor of process to be used, is in charge of erection.

**Humble Oil & Refining Co.,** Humble Building, Houston, Tex., plans new recycling plant for natural gasoline production near Katy, Tex., including compressor station, steel tank storage division, pipe lines and other facilities. Cost over \$2,000,000 with equipment. Stanolind Oil & Gas Co., Gulf Building, Houston, is interested in project.

## Central States

● **Cleveland Pneumatic Tool Co.,** 3734 East Seventy-eighth Street, Cleveland, has asked bids on two one-story additions, about 60,000 and 20,000 sq. ft. respectively, and is negotiating with zoning board for erection. New units will supplement a one-story extension, for which general contract recently was let to Sam W. Emerson Co., 1836 Euclid Avenue, and will cost about \$500,000 with equipment. Ernest McGeorge and William Hargett, Associated, 9400 Quincy Avenue, are engineers.

**Curtiss Aeroplane Division,** Curtiss-Wright Corp., 30 Rockefeller Plaza, New York, and Vulcan and Kenmore Avenues, Buffalo, has let general contract to Darin & Armstrong, Inc., 2041 Fenkel Street, Detroit, for new plant at Port Columbus, Columbus, Ohio, for production of military airplanes for Government. Cost over \$4,500,000 with equipment. Albert Kahn Associated Architects & Engineers, Inc., Detroit, is architect and engineer.

**Ferro Enamel Corp.,** 4150 East Fifty-sixth Street, Cleveland, has asked bids on general contract for one-story addition, 80 x 140 ft., for a chemical processing unit. Cost over \$85,000 with equipment.

**Strietmann Biscuit Co.,** Twelfth Street and Central Parkway, Cincinnati, has let general contract to Ferro-Concrete Construction Co., Third and Elm Streets, for new two-story baking plant at Mariemont, near Cincinnati, 160 x 1145 ft. Cost close to \$2,000,000 with traveling ovens, mixing machinery, conveyors, loaders and other mechanical-handling equipment. John H. Deekin, Times-Star Building, is architect; A. M. Kinney, Inc., Carew Tower Building, is mechanical engineer.

**Thompson Aircraft Products Co.,** 2196 Clarkwood Avenue, Cleveland, recently organized as a subsidiary of Thompson Products, Inc., same address, automotive and aircraft equipment, has acquired 100 acres at Euclid, near Cleveland, for new plant, totaling 575,000 sq. ft. of floor space, for production of aircraft engine valves and parts for Government. Cost about \$11,000,000. Arrangements for appropriation in that amount are being made with Defense Plant Corp., Washington, a Federal agency.

**Milner Packing & Provision Co.,** Frankfort, Ind., meat packer, has asked bids on general contract for one and two-story addition. Cost close to \$50,000 with equipment. Smith, Brubaker & Egan, 30 North La Salle Street, Chicago, are architects.

**Monsanto Chemical Co.,** 1700 South Second Street, St. Louis, industrial chemicals, has let general contract to Fruin-Colnan Contracting Co., Merchants-Laclede Building, for five-story addition, 120 x 160 ft., for storage and distribution. Cost over \$250,000 with equipment.

**Armour & Co.,** Union Stock Yards, Chicago, have awarded general contract to Swenson Construction Co., Victor Building, Kansas City, Mo., for one-story addition, 150 x 187

ft., to processing and packing plant at Kansas City, Kan. Cost close to \$125,000 with equipment.

**Grieder Machine Tool & Die Co.,** 2114 East Woodbridge Street, Detroit, has asked bids on general contract for one-story addition. Cost close to \$60,000 with equipment. Lyndon, Smith & Winn, Murphy Building, are architects.

**Bohn Aluminum & Brass Corp.,** Lafayette Building, Detroit, has awarded general contract to Kriehoff Co., 6661 French Road, for one-story addition to local plant No. 1, 2512 East Grand Boulevard. Cost over \$100,000 with equipment. Company has arranged with Navy Department for expansion in Detroit plants for production of light parts for airplane engines, to cost \$1,216,000, fund to be provided by Government.

**Wesson Co.,** 1050 Mount Elliott Avenue, Detroit, cutting tools, dies, etc., has let general contract to Campbell Construction Co., 3255 Goldner Street, for new one-story plant, 100 x 150 ft., at Woodward Heights Boulevard and Goodrich Avenue. Cost over \$75,000 with equipment.

**Commonwealth Brass Corp.,** 5835 Commonwealth Avenue, Detroit, automobile parts, valves, fittings, etc., plans one-story addition, 90 x 135 ft. Cost close to \$65,000 with equipment.

**Jeffrey Mfg. Co.,** Book Tower Building, Detroit, elevating, conveying, screening and other machinery, with plant at Columbus, Ohio, plans one-story factory branch, storage and distributing plant on St. Jean Avenue, Detroit. Cost close to \$50,000 with equipment.

**Chicago Metal Mfg. Co.,** 3724 South Rockwell Street, Chicago, metal stampings, steel boxes, etc., has let contract to Heidel & Beck, 6235 South Michigan Avenue, for one-story addition, 81 x 245 ft., for storage and distribution. Cost close to \$60,000 with equipment. Cedric A. Shantz, 25 East Jackson Boulevard, is architect.

**Sinclair Refining Co.,** 135 South LaSalle Street, Chicago, has asked bids on general contract for two one-story additions to bulk oil division at refinery at East Chicago, Ind., 90 x 250 ft., and 85 x 100 ft., for an oil specialties building and for storage and distribution, respectively. Cost over \$90,000 with equipment.

**Globe Machinery & Supply Co.,** 205 Court Street, Des Moines, Iowa, has let general contract to Weitz Co., Inc., 713 Mulberry Street, for one-story and basement addition for storage and distribution. Cost about \$65,000 with equipment. Proudfoot, Rawson, Brooks & Borg, Hubbell Building, are architects.

**Harvey Hubbell, Inc.,** 564 West Monroe Street, Chicago, electrical equipment, has let general contract to H. E. Johnson, 7723 South Michigan Avenue, for one-story addition, 90 x 95 ft., with extension about 30 x 40 ft. Cost close to \$50,000 with equipment. Shaw, Naess & Murphy, 80 East Jackson Boulevard, are architects.

**City Council,** Vinton, Iowa, asks bids until Feb. 14 for extensions and improvements in municipal power plant, including new 700-kw. diesel engine-generating unit, exciter, oil tank, air filter and auxiliary equipment. Stanley Engineering Co., Muscatine, Iowa, is consulting engineer.

**Great Lakes Forge Co.,** 1220 West 119th Street, Chicago, has let general contract to Lewis B. McDowell, 53 West Jackson Boulevard, for one-story forge shop at 11823-31 South Ada Street, 54 x 100 ft. Cost close to \$50,000 with equipment.

## Western States

● **Moulding Supply Co.,** 1121 South Meridian Street, Alhambra, Cal., metal moldings, etc., plans one-story machine shop on adjoining site, 25 x 200 ft. Cost close to \$50,000 with equipment.

**Shell Oil Co., Inc.,** Shell Building, San Francisco, plans new plant for production of synthetic rubber near oil refinery at Deer Park, Tex., and will use certain petroleum by-products from refinery noted. Cost over \$2,000,000 with equipment. Shell Chemical Co., and Shell

Development Co., both at location first noted, affiliated interests, will be active in project.

**Bureau of Supplies and Accounts,** Navy Department, Washington, asks bids until Feb. 4 for motor-driven pumps, spare parts, tools and wrenches (Schedule 4953); until Feb. 18 for electric cable (Schedules 4993 and 4994) for Mare Island and Puget Sound Navy yards; until Feb. 4 for 33,900 lb. of admiralty metal condenser tubing (Schedule 4987), 36,000 lb. of copper-nickel alloy condenser tubing (Schedule 4988) for Mare Island yard; until Feb. 6, cast bronze pipe flanges (Schedule 4991) for Mare Island and Brooklyn yards.

**General Electric Co.,** Ontario, Cal., Hot-point Division, electric heating and cooking appliances and equipment, has let general contract to Stratton Construction Co., 119 North Oak Avenue, Temple City, near Los Angeles, for one-story addition, about 25,000 sq. ft. of floor space. Cost over \$100,000 with equipment. Claud Beelman, Union Bank Building, Los Angeles, is architect.

**Crane Co.,** 301 Brannan Street, San Francisco, has asked bids on general contract for one-story addition for pipe storage and distribution. Cost close to \$50,000 with equipment. H. B. Hammill, 381 Bush Street, is architect and engineer.

**Firestone Tire & Rubber Co.,** 2525 Firestone Boulevard, Los Angeles, has let general contract to Myers Brothers, 3407 San Fernando Road, for one-story addition, 160 x 200 ft., for storage and distribution. Cost close to \$85,000 with equipment. Webster & Wilson, Architects' Building, are architects.

**Bethlehem Steel Co.,** Shipbuilding Division, Los Angeles, has let general contract to R. E. Campbell, 316 East Weber Street, Compton, Cal., for one-story machine shop, 85 x 140 ft. Cost close to \$100,000 with equipment. J. H. Davies, Ocean Center Building, Long Beach, Cal., is consulting engineer.

## Canada

● **Canadian Ingersoll-Rand Co., Ltd.,** Commissioners Street, Sherbrooke, Ont., air compressors, rock drills, engines, etc., will begin superstructure for one-story machine shop. Stewart Construction Co., 14 Dufferin Street, is general contractor. Cost close to \$115,000 with equipment.

**McKinnon Industries, Ltd.,** Ontario Street, St. Catharines, Ont., mechanical equipment, chains, etc., has asked bids on general contract for one-story addition, 260 x 460 ft. Cost over \$325,000 with equipment. A. E. Nicholson, 46 Queen Street, is architect.

**English Electric Co. of Canada, Ltd.,** George Street, St. Catharines, Ont., electrical equipment and parts, will begin superstructure for one-story addition, 150 x 390 ft., for which general contract recently was let to Redfern Construction Co., Ltd., Excelsior Life Building, Toronto. Cost close to \$350,000 with machinery.

**Dominion Foundries & Steel, Ltd.,** Hamilton, Ont., has let general contract to Canadian Engineering & Contracting Co., Ltd., 25 Hughson Street, for plant addition to cost \$250,000. Prack & Prack, 36 James Street South, are architects.

**Department of Munitions and Supply,** Ottawa, Hon. Angus L. Macdonald, acting Minister, has let general contract to Russell Construction Co., Ltd., Harbor Commissioners Building, Toronto, for three buildings at Central Mechanical Depot, London, Ont., to cost about \$2,500,000. Two buildings will be 300 x 700 ft., and one 300 x 1000 ft.

**Department of Munitions and Supply,** Ottawa, has let general contract to Anglin-Norcross (Ontario), Ltd., 57 Bloor Street West, Toronto, for ordnance plant at Long Branch, Ont., to cost \$275,000 exclusive of equipment. General contract also has been let to Atlantic Construction Co., for seaplane and airplane overhauling base at Dartmouth, N. S., to cost \$150,000. Ross & MacDonald, 1010 St. Catharines Street West, Montreal, are architects.

**Engineering Tool & Forgings, Ltd.,** 30 Woodburn Street, St. Catharines, Ont., has let general contract to J. B. Stork for one-story plant addition, 48 x 75 ft., to cost with equipment about \$75,000.